N.A.C.A. BULLETIN

IN TWO SECTIONS • SECTION ONE

FEBRUARY

1950

National Association of Cost Accountants
505 PARK AVENUE, NEW YORK 22, N. Y.

IN THIS ISSUE

PAGE

How Do We Stand With Inflation?—A Defense of Conventional Accounting, by *Christian E. Jarchow* 687

Daily Reports to Help the First-Line Supervisor Control Costs in a Steel Rolling Mill, by *David R. Clements* 699

The Push for Pensions—Important Considerations in Devising and Qualifying a Pension Plan, by *Paul G. Rohlfing* 715

Assembling and Reporting Employee Service Data for Actuarial Use in Devising a Pension Plan, by *Norman F. Yount* 723

A Company-Trusteed Profit-Sharing Retirement Plan With Annual Distribution of Fund Income, by *Merlin H. Birk* 733

A Cash Forecasting Procedure for Smaller Companies, by *Orrin F. Brunner* 741

Better Identification of Expense Materials Through Mnemonic-Numeric Coding, by *Noel L. Smith* 749

Scheduling Production and Recording Contract Costs in the Installation of Cotton Gin Buildings, by *J. Kiernan White* 755

A System for Handling Customers' Orders and Exchange Requests in a Mail Order Business, by *Ford A. Grant* ... 767

This Month's Authors 774

Shorts

What Responsibilities Should the Accountant Shoulder? *A Symposium* 711

Payday Every Day—The Use of Staggered Payroll Periods 732

The Cost Forum 775

Marginal Profit Analyses—Training Accounting Staff—Scrap Performance—Standards for Order Picking

This *Bulletin* is published monthly by the National Association of Cost Accountants, 505 Park Ave., New York 22, N. Y. Subscription price, $10 per year. Reentered as second-class matter September 22, 1949, at the Post Office, New York, N. Y., under the Act of March 3, 1879.

COPYRIGHT BY THE
NATIONAL ASSOCIATION OF
COST ACCOUNTANTS
FEBRUARY, 1950

HOW DO WE STAND WITH INFLATION?— A DEFENSE OF CONVENTIONAL ACCOUNTING

by CHRISTIAN E. JARCHOW
Vice President and Comptroller,
International Harvester Co., Chicago, Ill.

The present article takes a considered look at the principal antidotes which have been made use of in corporate accounts to counter the effects of inflation on results shown by the profit and loss statement and finds little to recommend them as departures from conventional accounting practice. The author believes that interpretation of results, rather than change of the basis on which they are presented, is the proper avenue to serviceable financial statements.

THE rapid tempo of inflationary forces that have held sway in this country during the past four years has brought about a condition for which the accounting profession has been considered by some people to be at least partly responsible. I might say parenthetically that in using the term "accounting profession" I refer to accountants generally—in industry, in public accounting, and in schools of business administration. The accusation has been that accountants are sanctioning understatement of costs with corresponding overstatement of profits. It is alleged that this overstatement of corporate profits in comparison with economic income has been fraught with potentially dangerous influences on management, labor, stockholders, and government.

Criticism Has Centered on Inventories and Depreciation

It is charged that these groups may arrive at erroneous conclusions and decisions or may be encouraged to make unjustified demands in contemplation of increased profits as reported. Management may be inspired to enlarge productive facilities and so raise the break-even point above what can be justified in later years. Furthermore, management may encourage or approve the payment of increased dividends to an extent which may later prove to have been improvident. Labor may feel justified in asking for increased wages regardless of productivity. Stockholders may demand higher dividends. Government may feel justified in seeking higher taxes as a restraining measure on excessive profits and in spending the money thus obtained on social measures. A sub-

stantial share of responsibility for such developments briefly constitutes the indictment leveled at the accounting profession.

During the past four years, accounting publications have contained numerous articles criticizing accounting methods, principally with respect to the two tangible assets, inventory and fixed property. Curiously enough, there has been little criticism directed at the methods used in accounting for intangible assets—cash, securities, and receivables—despite the obvious fact that the capital represented by these assets is subject to the same "erosion" from inflation as that invested in inventory and fixed property. The criticisms have often taken the form of proposals for new accounting methods to take care of the situation. In the course of things, some methods, regarded as unconventional, have found their way into the practices of individual companies. Let us review briefly the arguments for and against departures from the conventional methods of accounting for inventory valuations and for the recovery of capital invested in depreciable fixed assets.

"Lifo" Basis of Inventory Valuation

When one speaks of unconventional methods of evaluating inventory, with corresponding effects upon reported profits and the balance sheet, the "lifo" and reserve methods come to mind. When Congress in 1938 first authorized the use of the "lifo" method of inventory valuation for tax purposes, it was then made available to tanners and producers and processors of nonferrous metals. These alone were permitted to use it. Evidently the 1938 provision in the income tax law was intended to grant relief only to companies manufacturing products, the selling prices of which react quickly to changes in prices of raw materials, and engaged in industries characterized by a relatively slow turnover and substantial percentage of investment in inventory. However, the Internal Revenue Act of 1939 extended the option of using "lifo" to a larger group of companies. By the end of 1947, after a succession of liberalizing interpretations and tax court decisions, it had become permissible for even retailers to use "lifo."

The "lifo" method of inventory valuation theoretically matches current costs against current sales revenue. The chief claims advanced in its behalf are that it seems to bring reported profits more into agreement with disposable income and that, in a period of inflation, if it is adopted at a time when price levels are relatively low, considerable savings in taxes will result. This oppor-

tunity for tax savings has been the decisive consideration in most decisions to adopt "lifo" since 1939. However, industry in general has not adopted this method for a variety of reasons that are difficult to diagnose as to their relative importance. Even after the "lifo" method had been extended to an enlarged group of companies, there was not at once a clear understanding of what was required to comply satisfactorily with the Bureau's interpretation of requirements.

This concept of the difficulty of application, together with the fact that the Bureau's interpretation and practice were not a matter of record and differed as among locations, caused most controllers to refrain from recommending the adoption of "lifo." Since then, the uncertainty of price trends has had the same restraining influence for, once this method is elected for tax purposes, it can be dropped only with the consent of the Commissioner of Internal Revenue and subject to such stipulations as he may lay down. Consequently much concern has been manifest because of the fact that, if "lifo" should be adopted and the market value should thereafter fall below "lifo" cost, it would be necessary to pay income taxes even when an operating loss would be recognized under the cost or market method. This is true because basic inventories must be maintained at their original cost until they are liquidated, even though market prices fall below cost.

Results of "Lifo" Not All that Could Be Desired

The "lifo" basis of inventory valuation has never been approved by more than a relatively small segment of the accounting profession and its condemnation has been quite severe in some quarters. From a theoretical viewpoint, its merits are definitely questionable and it has been charged with causing such confusion and inconsistency that it is now impossible for stockholders or any other interested persons to make valid comparison of the profits of companies, even in the same industry, because some companies report under "lifo" and others do not. This condemnation is a broad one and properly characterizes the accounting results achieved to date. However, it seems clear that the individual companies cannot, with equal propriety, be condemned or criticized for adopting "lifo." The option offered companies by the government was primarily in the nature of a tax concession. Consequently, if the management of a company, including the controller, accepted "lifo" under the conviction that it would result in substantial tax

savings, it can hardly be justly accused of fault for so doing. Indeed, it might be subject to criticism for not adopting it.

However, there is no doubt, from an over-all accounting viewpoint, that the results have been lamentable. If a recipient must be found for condemnation, it seems to me that it should be the government itself. Originally, "lifo" was intended only for the relatively few companies which needed it because they dealt in a few basic materials subject to volatile price fluctuations. However, the government subsequently retreated from this limiting position and made "lifo" available to practically all companies, regardless of need. It was this action that provoked a diversity in accounting methods which cannot be reconciled under sound accounting principles, for the "lifo" method cannot be employed for tax purposes unless it is likewise reflected in accounting records.

Inventory Reserve Method

The reserve method of evaluating inventories is similar to "lifo" in that it rests on the same basic assumptions of fixed inventory investment and on the concept that a going concern must maintain an inventory equal at least to a given minimum quantity. The inventory reserve method calls for periodic reservations out of income in a period of rising prices in order to maintain the basic inventory investment. The reserve is returned to income in declining price periods. Presumably, the reserve should be shown in the balance sheet as a contra to the inventory. Unlike "lifo," the inventory reserve method has never been permitted for income tax purposes in the United States.

The uninterrupted rise in price levels of the past ten years has probably dampened the ardor of many advocates who formerly favored providing such reserves out of income. They can hardly avoid contemplating the situation that would have prevailed had they initiated the reserve method for their companies in 1939. With a basic inventory on hand at that time of, say, 100 million dollars, such a company would now have a reserve of perhaps 70 million dollars, created out of income and presumably displayed on the balance sheet as contra to inventory, if a reserve plan had been consistently followed. The two problems that would now confront it would be the eventual disposition of the 70 million dollar reserve and the justification of what had been done to the historical income record of the company, in view of the fact that the inventory on hand can be sold at a price that will recover the 170 million

dollars plus a profit. Of course, management might have chosen to provide considerably less than 70 million dollars as inventory reserves during the ten-year period. However, it is this lack of restriction on arbitrary action and lack also of precise technique that has led to the severest condemnation of the inventory reserve method, i.e., that it is a tool for the manipulation of profits.

Inventory reserves imply that during years following that for which a reserve provision is set up, not even cost will be realized. While a reserve against remote or contingent declines in realization values is prudent, it has no place in working capital, disguised as an immediate requirement. In my opinion, its proper place in most cases is in net worth, created therefrom and segregated there along with similar reserves for contingencies.

The Search for a Basis for Increased Depreciation Charges

Turning to the subject of unconventional methods of recovering the investment in fixed property with corresponding effects on reported profits and the balance sheet, we are confronted with various proposals for accelerated depreciation and some instances in which they have been put into practice. There are two principal difficulties which pertain to changing the conventional method of accounting for depreciation to a method that will more nearly relate the amounts provided to the cost of replacing the fixed property the depreciation of which is being recorded. These are:

1. Replacement of fixed properties, if it takes place at all, will occur, in most instances, many years after the provision for depreciation and at an unpredictable time and price.
2. The item of fixed property that will be purchased in the future as replacement will seldom, if ever, be exactly the same as the item replaced.

Naturally, then, the basis of increased depreciation charges has had to be somewhat general. Supplementary provisions over and above conventional charges for depreciation have been of three types in recent years, as follows:

1. Adjustments charged to operations as separate deductions, apart from the conventional depreciation charge.
2. Appropriations out of net income, shown at the bottom of the income statement.
3. Reserve appropriations out of earned surplus.

The first of these methods is the one that can be regarded as

most objectionable, for the reason that it subjects profits to possible manipulation and is therefore a potential source of public distrust of reported profits. The practice of increasing depreciation charges because replacement costs are up, followed in the last few years by some of the larger companies, and of charging profits with what are considered abnormal construction costs, has tended to decrease public confidence in accounting statements, so much so that the S.E.C. has undertaken to restrict the practice.

Conventional Methods Found Serviceable at Harvester

At Harvester, we have not as yet been convinced that we should change the practice adhered to for a number of years of determining our profits in a manner that will avoid implications of shifting income from favorable to unfavorable years or vice versa. We have continued to value our inventories at the lower of cost or market and have not created inventory reserves out of income. In this connection, we believe that any loss which might eventually be attributed directly to the effect of falling prices should be considered as a regular operating result when it occurs. We believe it is far better to record it as such in the year of its incidence than to tamper with the earnings of a long succession of years in order to have a reserve against an uncertain contingency. If it does eventuate, its effects must be met by the financial strength of the company, regardless of whether that strength be represented by the balance in the surplus account (or, as we term it, "net income retained for use in the business") or by its equivalent in two accounts, inventory reserve and surplus, taken together.

We feel the same way about depreciation, which we continue to compute on the cost of depreciable property. It does not concern us greatly whether the additional amount needed for the recovery of replacement costs is shown in the reserve for depreciation or as net income retained for use in the business, so long as there is adequate recovery in the selling price. We consider this dual problem, namely the recovery of replacement costs of inventory and of fixed properties, to be in the managerial domain. Management is cognizant of it when fixing selling prices and again when paying dividends. Beyond that, we explain in our annual report, as clearly and simply as we can, that the earnings as reported in the income account and the amount retained for use in the business must be larger than they used to be because the present-day dollar has decreased in purchasing power. After all, the individual knows

the dollar and understands from personal experience the effects of its diminishing purchasing power. It seems more sensible to report earnings to him in terms and concepts with which he is familiar than to attempt to give him an advanced lesson in economics.

Viewpoints of the S.E.C. and the B.I.R.

It might prove interesting at this point to indicate what is considered acceptable accounting practice with respect to inventory valuations and depreciation from the viewpoints of the Securities and Exchange Commission and the Bureau of Internal Revenue. The Commission, although it possesses unquestioned authority, has consistently indicated its desire for the accounting profession to define what constitutes good accounting practices. It has been inclined to follow such definitions. In consideration of its function, it must be solicitous that sufficient deductions be taken from income. The Bureau, on the other hand, guided by its conception of what constitutes taxable net income, has the tendency to limit deductions. In general, the Commission will allow everything for report purposes that the Bureau will allow for tax purposes, including charges to costs resulting from "lifo" method of inventory valuation and depreciation charges based on any method recognized as following good accounting principles, such as the straight line method, declining balance method, and sinking fund method. In the past, generally speaking, the Commission has more readily accepted accelerated depreciation and a greater diversity of depreciation methods than has the Bureau, though there has been a definite tendency during the past two years for the Commission to manifest disapproval of methods not comprehended as approved accounting principles. Even the Bureau will allow accelerated depreciation for tax purposes, but only in accordance with specified conditions that ordinarily seem to be almost impossible to meet.

The Threefold Role of the Accounting Profession

There is no doubt that conventional accounting methods can produce misleading results in inflationary times and doubtless this will continue to be so with respect to the uninformed and to the misinformed. It is my personal conviction that the accounting profession has not actually been to blame to any appreciable extent for the economic changes that have occurred during the past four years. Neither do I think that management has been culpable in this respect. The basic responsibility for these economic changes rests entirely with government.

I believe it is entirely feasible, even at the present stage of inflation, to continue with conventional accounting methods and still safeguard in all possible ways the well-being of business. I believe that the potential dangers, cited at the start of this paper, in reporting profits under conventional methods with respect to the three groups, management, labor, and stockholders, can be effectively overcome and circumvented. I believe this can be accomplished without destroying the well-established conventional accounting methods with their many valuable attributes, including the safeguards placed against arbitrary manipulation of profits and transfers of profits from one year to another. I think it would be extremely unfortunate to discard conventional practice at the present time and to substitute therefor uncontrolled practices decided upon by individual managements and accountants. This alternative would lead to a chaotic condition, even though curbed and held within certain limits by the Securities and Exchange Commission.

How can the accounting profession do its proper part toward protecting business capital during such times as the present? It should do so by working with management in three principal ways:

1. By keeping management fully aware at all times of the current implications of reported profits as related to an inflated dollar.
2. By preparing for management proper cost bases for selling prices and advising as to required profit margins.
3. By collaborating with management in preparing a clear explanation of the implications of inflationary conditions for the annual report or other media that go to the stockholders and employees.

Informing Management

Through the performance of the first service, that of informing management of the nature and sufficiency of profits in order to attain desired objectives, management will be made fully cognizant of the amount of reported net profit that must be realized and retained in the business for the sole purpose of maintaining the scope of operations at a continuing level. It will appreciate the fact that it is only the excess of reported net profits over this amount that is properly available, first, for dividends, second, for required increased working capital and investment in fixed facilities necessary for increased scope of operations and, third, for security against future contingencies. Management thus will be

enabled to gauge intelligently the need for outside financing and the timing and volume if it is required.

Management knows that more monetary capital is required in periods of inflation when the costs of everything it needs to keep going increase quite rapidly. It realizes this fact most keenly when inventories are replenished and when machinery, tools, and equipment have to be replaced. However, even well-informed management may be lulled by a hope of a leveling off or even a retrogression in the inflationary trend or by an actual temporary slowing down of such a trend or even by being overly impressed by the size of reported net profits as compared with those of the prewar period. It seems to me that it is clearly incumbent on the controller's department to call attention diplomatically and constantly to the nature and sufficiency of reported profits.

Providing a Cost Basis to Test Selling Prices

By performing the second and related service, that of preparing for management the proper cost bases for fixing selling prices, it will be possible to delineate at least approximately the price levels required to maintain the business and to provide for reasonable dividends and other normal objectives. During inflationary times it is not always possible, as I have previously indicated, to break even on an economic basis. This is true of a corporation as well as of an individual, as it may well be that government controls or competition may prevent selling prices from being established at a level high enough to accomplish all desired purposes. However, with proper functioning by the accounting department, it should be possible for everyone interested to realize fully the true significance of the conditions under which business is being conducted and of the profit results that are realized and reported.

Informing Stockholders and Employees

By working with management to perform the third service, that of explaining to labor and shareholders the nature and sufficiency of reported profits, it is my opinion that such an explanation, if well done in annual reports and other reporting media, is quite effective. I believe that such treatment is preferable to any arbitrary treatment which differs radically from the conventional method of determining and reporting net profits in the accounting statements themselves. After all, one should be able to present the facts clearly and plausibly, particularly if the terms and concepts

used are familiar to the reader. The individual, whether he be an employee or a stockholder or simply John Q. Public, knows the dollar and understands from personal experience the effects of its diminishing purchasing power.

It seems to me that few of us really believe that the reporting of net profits, if it had reflected depreciation based on replacement values, would have diminished the demand from labor for increased wages during the past four years. I believe the same is true with respect to treating the inventory values under a reserve method or under the last in, first out method. I know of no evidence indicating that those companies which have chosen to adopt the latter method in the expectation of gaining tax advantages or which have arbitrarily increased their depreciation charges, have enjoyed any relatively greater exemption or relief from employee pressures as a result of so doing.

I think it is true that most stockholders have not been very happy during the past few years in that their income from dividends has not kept pace with inflation, and the stock market is clear proof that potential stockholders have not been enthusiastic about dividend rates either. However, it seems to me that both actual and potential stockholders, certainly if informed, have realized that more monetary capital has been required than ever before to keep the business going and growing. Their principal doubts and questions, I believe, have properly pertained to the degree to which profits have been withheld in order to finance long-term assets and whether a larger part of this financing should not have been through long-term indebtedness or through new equity capital instead of out of reported profits. However, it seems to me that, if inflation is halted (and if it is not, neither accounting methods nor anything else can be rationalized), the stockholders who have been denied larger dividends in recent years, because so much of the profits have been invested in long-term assets, may reasonably expect to receive larger dividends before long. If we may assume that the major portion of expansion programs is completed and that profits will continue at about the same rate, then the mere facts that long-term interest-bearing debt has not been incurred to any greater extent and that more capital stock has not been issued to new stockholders, thereby diluting the equities of the old stockholders, should augur well for increased dividends in the future.

Better General Perspective on Profits Evident

In this connection, I think a great deal of progress has been made during the past few inflationary years, in effectively informing all interested groups of the nature and sufficiency of reported profits. There is a great deal of impressive evidence that this is true. The recent report by the Steel Industry Board to the President of the United States contains these statements:

> ". . . in the first half of 1949, the annual rate of profit was . . . 124 per cent above the 1940-41 average.
>
> "The rates of profit—the dollar amounts of these profits figured as percentages of net worth—must be substantially discounted, however, for we are now considering 1948 and 1949 dollars which are considerably less valuable than those of 1939 or 1940 or 1941, whereas a large part of the capital assets in the net worth is in terms of dollars of higher value.
>
> "The profits of the industry stated as a percentage of sales are also substantial for the year 1948 and the first quarter of 1949 (6.3 per cent and 6.8 per cent, respectively) but are not out of line with comparable prewar years like 1940 and 1941 when the percentages were 8.2 and 6.1.
>
> "In evaluating the amount of profits in any given year, like 1948 or 1949, to determine whether the workers have received a fair share thereof, it is necessary also to consider the low level of profits or lack of profits in other years of the business cycle. The prosperity of a volatile industry like steel and its ability to pay should be judged over a longer range.
>
> "The industry's recent policy of modernizing and expanding physical plant and facilities has absorbed most of its recent substantial profits. Given the country's peacetime and possible wartime needs for larger steelmaking capacity, the program seems entirely desirable."

In the above statements there seems to be a clear recognition that the ratio of net profit to sales is a better and fairer gauge of the reasonableness of a company's profit than is the ratio of profit to net worth, that profits are not excessive or inflationary if (on the basis of ratio to sales) they do not exceed those of prewar years, and that business should be allowed considerably larger dollar profits in years of unusually large sales volume in order to carry them through years of low profits or perhaps no profits. These are

all very sensible statements and I think it reasonable to believe that they are a reflection, to some extent at least, of the effectiveness of the job that the accounting profession and management have done in the public presentation of their convictions on these subjects.

Service to Management Does Not Require New Departures

It has been the theme of this article that the conventional methods of accounting, as followed by most companies thus far in their methods of determining depreciation and inventory values, have not had any appreciable damaging effects on business such as might result from erroneous thinking and, therefore, erroneous conclusions on the part of management, labor, and stockholders. However, I believe firmly that the accounting profession does have a highly important function to perform in this whole area, i.e., that of keeping management alerted at all times to the danger inherent in the depreciated dollar. In particular, this involves working very closely with management, as long as the inflationary trend continues, in determining selling prices needed to recover replacement costs of fixed property values consumed and the replacement values of inventories sold and, in addition, to provide enough profits for dividends and other reasonable needs. Such selling prices should be computed, in my opinion, regardless of whether or not competition will permit establishing them in full. The important thing is that management should be aware of the selling price required to accomplish the necessary objectives mentioned and should know also the degree to which realization of these objectives is not now practicable.

Perhaps, if the accounting profession has been deficient in performing any of its proper functions during the past few years, it may have been in this particular regard of keeping management informed of the full implications of the effect of the weakened purchasing power of the dollar. With all of the orientation that we have now had on this subject, there should be no justification for future delinquency on this score. I believe the accounting profession should also persist unremittingly in the endeavor to obtain a liberalization in depreciation rates for tax purposes, to be applied within the framework of approved depreciation methods. It will be noted that none of these suggestions requires any disturbing departure from long-established, time-tested accounting concepts, principles, and practices, of which I continue to be an adherent.

DAILY REPORTS TO HELP THE FIRST-LINE SUPERVISOR CONTROL COSTS IN A STEEL ROLLING MILL

by DAVID R. CLEMENTS
Chief Accountant, Connors Steel Co.,
Birmingham, Ala.

Working back to responsibility determination from over-all monthly cost reports, if the only method used for disclosing performance, is delayed action cost control. The author of this article describes means by which foremen in all principal departments know each day in terms of hours and dollars how their respective performances for the day before stacked up against standards and, in addition, know the trend for the current month. The cost control system descibed includes also reports issued in more summary form and at longer intervals.

THE first-line supervisor, the foreman, is the "man on the firing line," the representative of management closest to productive activity in the plant. It is he who has the greatest influence over the control of production cost. He schedules the men, orders materials and supplies, requests services, and directs production. This paper will discuss the more important responsibilities of the accountant in aiding the first-line supervisor to reduce production cost.

In order to obtain maximum benefits from cost control reports presented to the first-line supervisors, it is necessary to:

1. Furnish cost control reports as often as possible, preferably on a daily basis, so that corrective action can be taken as soon as it is apparent that such action is needed.
2. Present the information in operating rather than accounting terminology.
3. Exhibit only necessary and helpful information, avoiding concealing important information in a maze of figures.
4. Reflect both favorable and unfavorable results in such a way that the cause or individual responsible is clearly indicated, disclosing to the operator the weak points in each operation.
5. Make certain that all information contained in the cost control reports is accurate.

The Operation and Its Controllable Costs

The particular controls outlined and illustrated in this article are designed for a plant producing finished steel material such as angles, beams, channels, flats, strip, etc., and are based on the standard cost system, which is more readily adapted to cost control than any other cost accounting procedures. Finished steel is produced in accordance with a schedule prepared by a centralized sales and order department. Analyses of the favorable or unfavorable cost variances resulting from size of orders and sequence of the rolling cycles are not dealt with here. They are furnished to the top management of the company rather than to the departmental foremen, since the latter do not have control over the rolling schedule.

For the purpose of this study we will assume that the plant is made up of four principal departments: (1) steel yard, (2) rolling mill, (3) finishing department, and (4) shipping department. The three primary groupings of controllable cost, for which reports must be devised, are: (1) crew quotas, (2) performance and yield information, and (3) miscellaneous (demurrage, materials, supplies, fuels, maintenance, etc.)

Crew Quota Control

Reports should be provided each departmental foreman on each turn exhibiting over and under standard use of labor by occupations for his assistance in controlling the number of employees working under his supervision. The basis for control here is the standard crew quota showing number of employees required in each department for all of the various conditions under which the department might operate. In order to be effective, crew quotas should be established on engineering principles and should be approved by the top level management of the company. These crew quota standards must be revised immediately in case of changes in operating practices or equipment.

Information exhibited in cost reports designed for the control of crew quotas is very easily tabulated by comparing the hours worked on each occupation with the hours allowed for existing conditions in the approved standard crew quotas. Summarized reports of over and under standard uses of labor must be furnished to departmental and plant superintendents to maintain effective control over the use of labor. Also, it is beneficial to make it a requirement of operating procedures that the department or plant

superintendent approve over-quota use of labor as shown on time abstracts, before hours worked are posted to the payroll. It is desirable to evaluate man-hours variance to furnish complete analysis of variances. It is possible to have over or under use of hours with no money variance due to admixture of wage rates.

Basis of Performance Reporting

In general, cost reports designed for the purpose of controlling performance, i.e., the use of time, should always isolate the performance variances by individuals responsible and, if possible, should also show contributing causes in full or partial explanation. In order to have adequate information available for the purposes of cost reports, it is necessary to have engineered time and yield standards for each department. These standards must be flexible enough for application to the varying conditions that may exist in the operations from day to day. It is essential to maintain such standards on a current basis if controls of individual or crew performances are to be of benefit to the first-line supervisor, i.e., errors in such standards should be corrected when they become apparent and the standards should be revised for changes and improvements in operating practice, etc.

Performance variation from standard is developed for report purposes in the following manner. Actual time operated is compared with earned time, which is obtained by multiplying the production, service rendered, etc., on a particular turn by the standard time allowed, to arrive at the time gained or lost due to performance. This variance is multiplied by the standard cost of the unit of time used to arrive at the dollar value of the variance.

Steel Yard and Rolling Mill

Control must start with the arrival of the steel. Cars of incoming semifinished steel products (billets and slabs) enter the plant over a weight scale. As the first labor operation, crews consisting of a crane operator and two hookers unload the semifinished steel from railroad cars and arrange it in stacks in the mill yard. The steel yard foreman receives a Steel Yard Department—Daily Control, Exhibit 1, each day for the purpose of measuring the efficiency of the employees engaged in unloading incoming material. He can readily see from this report, on the sample figures used, that the crew headed by crane operator Jones falls consistently below the performance this operation should attain. This stands

STEEL YARD DEPARTMENT

UNLOADING & STACKING

MONTH OF MAY, 1949 — DAILY CONTROL — TURN 7 - 3

DATE	NO. 318 NAME JONES					NO. 332 NAME SMITH					NO. 324 NAME BROWN				
	CRANE HOURS			VALUE OF VAR.		CRANE HOURS			VALUE OF VAR.		CRANE HOURS			VALUE OF VAR.	
	BUD.	ACT.	VAR.	TO DAY	TO DATE	BUD.	ACT.	VAR.	TO DAY	TO DATE	BUD.	ACT.	VAR.	TO DAY	TO DATE
1	7.3	8.0	*.7*	$ *8**	$ *8*	8.1	8.0	*.1*	$ 1	$ 1	7.9	8.0	*.1*	$ *1*	$ *1*
2	6.8	8.0	*1.2*	*14*	*22*	8.5	8.0	*.5*	6	7	8.1	8.0	*.1*	1	–
3	7.1	8.0	*.9*	*10*	*32*	8.3	8.0	*.3*	3	10	8.3	8.0	*.3*	3	3
4	7.4	8.0	*.6*	*7*	*39*	8.0	8.0	–	–	10	7.4	8.0	*.6*	*7*	*4*
5	6.5	8.0	*1.5*	*17*	*56*	7.9	8.0	*.1*	*1*	9	7.7	8.0	*.3*	*3*	*7*
6															
28															
29	6.8	8.0	*1.2*	*14*	*469*	8.2	8.0	*.2*	*2*	67	7.9	8.0	*.1*	*1*	*78*
30	7.2	8.0	*.8*	*9*	*478*	7.9	8.0	*.1*	*1*	66	7.2	8.0	*.8*	*9*	*87*
31	7.7	8.0	*.3*	*3*	*481*	8.3	8.0	*.3*	*3*	69	7.6	8.0	*.4*	*5*	*92*

* *ITALICS* INDICATE UNFAVORABLE AMOUNTS

EXHIBIT 1

out
of
oth
as
req
bul

fur
is
all
rol
fac

E
Dep
of t
indi
be
is f
sho
in t
del
cos
equ
and
unf
the

Fini

In
chin
the
liari
ing
ening
tonne
inspe
prod
to th
tion,
sheet

out in the variance shown and in comparison with the performance of the other two cranemen shown on the same report. Cost of other operations performed by employees in this department, such as loading steel to be charged into the reheating furnaces, etc., require similar control if the cost of these particular operations bulks large enough to justify the maintenance of these reports.

Operations of the rolling mill department include the reheating furnaces, mill proper, hot bed, and shears. Semifinished material is weighed before being charged into the reheating furnaces and all finished products are weighed with the exception of material rolled in lengths beyond the physical limitations of weighing facilities. The weight of product beyond the capacity of these facilities is calculated on a theoretical basis.

Each turn foreman is furnished with Exhibit 2, Rolling Mill Department Daily Control, for the purpose of controlling the use of time on the mill during his turn. While unfavorable variances indicate, by themselves, the need for corrective action, it will often be necessary and beneficial to the foreman if additional analysis is furnished in the form of explanations. These explanations might show experience on previous rollings of the product involved or, in the case of mill delays, might consist of statistics disclosing delays by facility and cause. Such data might render practicable cost reduction through alteration of or improvements in present equipment and operating practice. Comparisons of standard yield and actual yield made for each turn, by product. In the event unfavorable variances are reflected due to below standard yield in the mill, an analysis is included in the explanations.

Finishing and Shipping

Included in the finishing department are all of the various machines used in straightening and shearing product delivered from the mill. As a result of the type of facilities available and peculiarities of certain rolled steel products, it is necessary to send varying quantities of material to the finishing department for straightening in order to meet commercial tolerances, even though the customer's orders do not specify machine straightening. The mill inspector makes the decision as to whether or not the particular product is to be routed to the finishing department or sent directly to the shipping department. In order to properly control this selection, the accountant prepares each turn from the mill production sheet (which shows the destination of each lift of finished product

ROLLING MILL DEPARTMENT
DAILY CONTROL

MONTH OF MAY 1949 TURN 7 - 3

DATE	NET TONS		YIELD PERCENT	OPERATING ANALYSIS EXPRESSED IN MINUTES												TURN SUMMARY ANALYSIS				VALUE OF VARIANCE TODATE
				ROLLING			ROLL CHANGES (TIME TAKEN)			PASS AND SIZE CHANGES			MISCELLANEOUS DELAYS			BUD.	ACTUAL	VARIANCE		
	CHARGED	FINISH		BUD.	ACT.	VAR.	BUD.	ACT.	VAR.	BUD.	ACT.	VAR.	BUD.	ACT.	VAR.			TURN	VALUE	
1	96.86	87.29	90.1	435	390	45	-	-	-	30	11	19	48	79	*31*	1.07	1.00	.07	$ 31	$ 31
2	81.71	74.82	91.6	391	355	36	100	95	5	26	18	8	43	12	31	1.17	1.00	.17	75	106
3	99.20	90.49	91.2	392	375	17	73	70	3	40	30	10	43	5	38	1.14	1.00	.14	61	167
4	60.41	55.06	91.1	286	333	*47*	140	134	6	10	5	5	32	8	24	.97	1.00	*.03*	*13*	154
5	27.90	22.01	78.9	176	216	*40*	140	191	*51*	*31*	*34*	*3*	19	39	*20*	.76	1.00	*.24*	*100*	54
6																				
7																				
29	70.88	64.73	91.3	361	338	23	33	40	7	31	60	*29*	40	42	2	.97	1.00	*.03*	*13*	687
30	53.14	50.10	94.3	355	392	*37*	51	60	*9*	20	28	*8*	39	0	39	.97	1.00	*.03*	*13*	674
31	57.39	50.27	87.6	234	277	*43*	140	150	*10*	-	-	-	26	53	*27*	.83	1.00	*.17*	*71*	603

* *ITALICS* INDICATE UNFAVORABLE AMOUNTS

EXHIBIT 2

roller
repo
teria
stan
finis
If,
ques
insp

In
in t
Com
for

for
we
the

pro
is
ord
ple
are
liv
tha
loa
Co
ma
roa
the
int
fig
an
by

rolled) a report of material sent to straightening machines. This report discloses by section, size, and customer the quantity of material sent to the straightening machines which was ordered to standard commercial tolerances and affords the foreman of the finishing department the opportunity of inspecting the material. If, in his opinion, the material does not need straightening, he questions the decision made by the mill inspector and asks that the inspection department reexamine the product.

In an effort to maintain the highest level of efficiency possible in the use of time while each machine is operating, a Daily Cost Control Report is presented to each finishing department foreman for each machine operated on his turn, as follows:

1. Machine number and name.
2. Budgeted machine hours, actual hours machine operated, and variance in machine hours.
3. Value of the machine hour variance for the turn and for the month to date.

This report takes the same form as that illustrated by Exhibit 1 for the use of cranes in the steel yard. Again it may be noted that we are concerned first with daily variance in hours and then with the cumulative value of the variances as the month goes on.

Material received from the mill and the finishing department is processed by the shipping crews to customers' bins, i.e., material is properly identified, placed in customers' bins, and entered on an order assembly card record. As assembly cards indicate completion of the various customers' orders, the finished steel products are removed from the bins and loaded into railroad cars for delivery to customer. For the purpose of this study, we are assuming that all shipments are made by railroad and that all material is loaded into gondola or box cars. The Shipping Department—Daily Control, Exhibit 3, is prepared for the shipping department foreman, and shows shipments separately for the two types of railroad cars, because of the significant cost differential resulting from the additional time required per net ton of product to load material into a box car as compared with a gondola car.

It is readily noted from the variances reflected by the sample figures on this report that corrective action is necessary. The variances are both heavy and fluctuating. Every effort should be made by the accountant to aid the shipping department foreman in cor-

SHIPPING DEPARTMENT ▪ DAILY CONTROL

MONTH OF MAY, 1949 TURN 7 - 3

DATE	SHIPMENTS										PROCESSING MATERIAL TO CUSTOMER BINS				
	GONDOLA CARS					BOX CARS									
	MAN HOURS			VALUE OF VARIANCE		MAN HOURS			VALUE OF VARIANCE		MAN HOURS			VALUE OF VARIANCE	
	BUD.	ACT.	VAR. *	TODAY	TODATE	BUD.	ACT.	VAR.	TODAY	TODATE	BUD.	ACT.	VAR.	TODAY	TODATE
1	69.8	80.0	*10.2*	*$ 38*	*$ 38*	27.5	32.0	*4.5*	*$ 17*	*$ 17*	58.7	48.0	10.7	$ 39	$ 39
2	81.6	96.0	*14.4*	*53*	*91*	36.6	40.0	*3.4*	*13*	*30*	32.3	24.0	8.3	31	70
3	79.3	88.0	*8.7*	*32*	*123*	29.1	32.0	*2.9*	*11*	*41*	43.8	40.0	3.8	14	84
4	70.7	80.0	*9.3*	*34*	*157*	22.3	24.0	*1.7*	*6*	*47*	51.5	56.0	*4.5*	*17*	67
5	67.9	80.0	*12.1*	*45*	*202*	37.5	40.0	*2.5*	*9*	*56*	46.1	40.0	6.1	22	89
6															
29															
30	84.1	96.0	*11.9*	*44*	*506*	29.3	32.0	*2.7*	*10*	*172*	35.1	32.0	3.1	11	261
31	75.6	88.0	*12.4*	*46*	*552*	22.7	24.0	*1.3*	*5*	*177*	44.1	48.0	*3.9*	*14*	247

* *ITALICS* INDICATE UNFAVORABLE AMOUNTS

EXHIBIT 3

Co

I
first
othe

I
with
mea
This
plan

rec
pra
tim
abl

recting a condition of this sort by analyzing the current operating practices with those in effect at the time standard crew quotas and time allowances for shipping were installed. Analysis would probably indicate one or more of the following sets of curcumstances:

1. Greater percentage of orders being loaded directly into car from mill than was the case when standards were established. The variance resulting from this condition, which could be caused by a change in type of customers' orders or improved product rolled in the mill, should be immediately corrected by a reduction in shipping personnel.

2. Change in packaging or loading instruction on customers' orders which require considerably more time in loading material for shipment. New time standards should be established if this condition exists so that the department supervisor will not be penalized. Revenue resulting from charging customers for special loading should be compared with the cost.

3. Inefficient operations in the shipping department. If this condition exists, special notice of the unfavorable variance should be reported to the plant superintendent in a plant-wide summary of unfavorable variances.

Control of Specific Cost Factors

It may sometimes be necessary, as in our case, to provide the first line supervisor with additional reports in an effort to control other elements of cost. The following are examples:

1. *Demurrage*—Each day the steel yard foreman is furnished with a report designed to make it possible for him to eliminate, as nearly as possible, all demurrage costs incurred in his department. This report, prepared from the railroad's check of the cars in the plant yard as of 7:00 a.m. each day, discloses the following:

a. Number of cars on hand.
b. Number of cars received the previous day.
c. Accrued "debits" and "credits"—month to date.
d. Cars on demurrage today, showing car numbers and cost of demurrage for each car.
e. Cars that will be on demurrage the following day unless unloaded and released to railroad.

2. *Mill delays*—Even though favorable variances might be reflected in the "miscellaneous delays" columns of the rolling mill daily control report shown as Exhibit 2, it is important that a complete analysis be made of the delays incurred on each turn by specific facility and cause, since a cost reduction of approximately a dollar a minute can be realized by elimination of any of these delays. An analysis for this purpose is made daily for each turn foreman by costing each delay reported by the mill delay clerks and classifying it according to its cause. In addition, a weekly listing is presented to the plant superintendent and the turn foreman, exhibiting the loss in minutes and the cost of delays incurred during the week and month-to-date, detailed by the specific causes and pieces of equipment responsible. Further summary reports covering periods of three to six months should provide supplementary help in these connections.

3. *Fuel cost*—The cost of gas used in the reheating furnaces for bringing semifinished steel up to rolling temperatures is usually large enough to warrant a daily cost control report to the turn foreman. Since the heater on each turn controls the quantity of gas used, the report exhibits the following information by individual heaters:

a. Budget, actual, and variance in M. cu. ft. of gas used per net ton charged.

b. Value of variance to day.

c. Value of variance month to date.

Standards covering the use of fuel must set forth gas requirements for (1) heating while rolling (different standards must be established for heating the various sized billets and slabs), (2) heating while mill is down for the various delays, (3) holding turn, and (4) heating-up turn. Standards must recognize the differing lengths of time required for the last three items mentioned. It may help to say that holding turn is the period during which the mill is not operating but material to be processed is retained in the furnace at lower temperature to be ready for rolling when operations are resumed. This occurs when rolling schedules are not on a continuous 24-hour cycle. Heating-up turn is defined as the turn immediately preceding the first scheduled rolling turn following a down period of 16 to 24 hours or longer.

MONTHLY ANALYSIS OF VARIANCES
CONTROLLABLE BY DEPARTMENTAL SUPERVISOR

MONTH OF MAY 1949

COLUMN NO.		1	2	3	4	5	6	7	8	9	10	11
		CAUSE OF VARIANCE										
	DEPARTMENT	LABOR		PERFORMANCE				YIELD	FUELS	REPAIR AND MAINT	ALL OTHER	TOTAL
		QUOTA	OVER TIME	ROLLING	ROLL & PASS CHANG	MISC DELAYS	ALL OTHER					
A	ACCOUNTING	280									150	170
B	INSPECTION		23								78	55
C	SUPT'S OFFICE										178	178
D	MECHANICAL	93	57						17	123	255	243
E	ELECTRICAL		43							15	104	76
F	YARD										56	56
G	ROLL SHOP						63			394	47	410
H	STEEL YARD						428			527	234	713
I	ROLLING MILL	410		782	391	367		892	227	3912	386	3157
J	FINISHING	138					823			721	450	486
K	SHIPPING						482			380	793	895
L	TOTAL	733	123	782	391	367	1796	892	210	3594	442	4362

EXPLANATIONS:

A-1 $ 280 – REDUCTION OF PERSONNEL IN PAYROLL DIVISION THROUGH IMPROVED PROCEDURES. STANDARDS WILL BE REVISED EFFECTIVE JUNE 1, RECOGNIZING NEW CREW QUOTA.

A-10 $ 150 – PURCHASE OF ELECTRIC CALCULATING MACHINE FOR PAYROLL DIVISION $628

G-9 $ 394 – REPAIRING NO. 2 MESTA ROLL GRINDER $483.

H-6 $ 428 – PRIMARILY ATTRIBUTABLE TO THE LOSS IN PERFORMANCE OF $481 BY THE UNLOADING AND STACKING CREW HEADED BY "CRANE OPERATOR — JONES"

H-9 $ 527 – REPAIRS MADE TO CRANE NO. 1 DURING MONTH $673.

I-1 $ 410 – UNDER STANDARD QUOTA USE OF MILL LABORERS DURING MONTH.

I-3 $ 782 – UNFAVORABLE VARIANCE DUE TO LOSSES INCURRED ON THE 3-11 TURN $391 AND 11-7 TURN $430 RESULTING FROM ABOVE STANDARD TIME REQUIRED WHILE ROLLING.

I-7 $ 892 – ABOVE STANDARD YIELD DUE TO GOOD SHEARING PRACTICE IN TAKING FULL ADVANTAGE OF THE INCREASE IN RANDOM LENGTH AND MULTIPLE LENGTH ORDERS.

I-9 $3912 – REPAIRS MADE TO FOLLOWING EQUIPMENT: REHEATING FURNACES $2112, 600 H P MILL MOTOR ON NO. 2 STAND $714, AND MILL SHEARS $964

J-6 $ 823 – OF THIS UNFAVORABLE VARIANCE, $694 WAS REFLECTED IN THE STRAIGHTENING AND SHEARING OF ANGLES ON NOS. 8 AND 13 MACHINES AND WAS INCURRED PRINCIPALLY ON THE 11-7 TURN.

K-6 $ 482 – DURING MONTH A GREATER PERCENTAGE OF ORDERS WERE LOADED BY THE MILL CREW DIRECTLY INTO CARS FOR SHIPMENT THAN WAS THE PRACTICE WHEN STANDARDS WERE ESTABLISHED.

K-10 $ 793 – PURCHASE OF BLOCKING LUMBER $889

L-2 $ 123 – OVERTIME IN THE INSPECTION DEPARTMENT CAUSED BY ABSENTEEISM DUE TO SICKNESS, AND THE OVERTIME IN THE MECHANICAL AND ELECTRICAL DEPARTMENTS WAS DUE TO EMERGENCY REPAIRS MADE TO THE REHEATING FURNACES AND MILL SHEARS.

* *ITALICS* INDICATE UNFAVORABLE AMOUNTS

EXHIBIT 4

4. *Repairs and maintenance*—In order that management may have information for correct decisions in regard to replacement of facilities and in order to insure proper control over the care and use of equipment by the employees responsible, a monthly report showing the following information by major classes of equipment is presented to the plant superintendent:

a. Budgeted repair and maintenance cost based on actual time operated during month.
b. Actual cost of repairs and maintenance.
c. Variances.

5. *Materials and Supplies*—A monthly report is prepared for the plant superintendent showing the quantity and value of each type of supplies purchased, broken down by individuals placing the orders. The accountant should be concerned primarily with the most expensive items. However, small cost items used in large quantities, such as paint brushes, flashlights, batteries, measuring tapes, small tools, electric switches, etc., should be watched.

Monthly Report of Controllable Variances

A summary columnar analysis of controllable variances by principal causes, with a line for each department, Exhibit 4, is prepared for the plant superintendent and the departmental foreman at the end of each month. All of the major variance classifications on this report have been covered in cost control reports prepared for the first-line supervisor daily to put him in a position to control such variances currently during the month.

Control at the Level of Cost Incurrence

Although it is the responsibility of operating personnel to control cost in the several departments, a better job can be done if the accountant does his part. It is the accountant's responsibility in this connection to furnish the operator with the control tools with which to perform a satisfactory job. The reports which have been described here comprise such tools. With the operator and accountant working together as a team, much can be accomplished. This is true at all levels of management, but it is perhaps most fruitful at the first-line level, the level where the greatest amount of direct cost is incurred. We have found the daily and cumulative reporting of variances, together with the supplementary reports issued at longer intervals, very satisfactory in helping the first-line supervisor to reduce and control costs.

What Responsibilities Should the Accountant Shoulder?

EDITOR'S NOTE—*The contributions of which this symposium is made up were evoked, as each indicates, by an article by Luis V. Manrara in the November 1949 issue of the* BULLETIN *in which the author called for strict adherence by the accounting profession to the cost basis of presentation and a withdrawal from any aspirations to the role of economist. Of the six responses included here, two express wholehearted agreement with the author's position. The remainder, while reflecting the feeling that Mr. Manrara has pointed up a fertile field for discussion, interpret his presentation as unduly restrictive of the accountant's place and function and offer additional viewpoints.*

I. AVOIDING THE ROLE OF PROPHET

Luis V. Manrara's article in the November 1949 issue of the *Bulletin*, "We Are Dragging Our Anchor—The Drift from Historical Cost" has hit the nail squarely on the head. Financiers, economists, businessmen, and others have no doubt been instrumental in getting the accountants to drag their anchor of factual accounting to a position of accounting to fit the value of the dollar at the moment. When you do the latter, your figures are a mixture of facts plus predictions as to what the dollar will be worth, not only at the present time but during the entire period during which the items on the balance sheet will be disposed of.

Who among the financiers and the others is capable of making these predictions with sufficient accuracy to warrant recording them on the books? Why, then, should they expect the accountant to make it or criticize him for not wanting to make it? Let us stick to historical facts in accounting, report the figures on that basis, and then let the readers stretch or contract the figures according to their own estimate as to what the economic future holds.

F. E. FEISTRITZER, *Indianapolis*

II. COST BASIS OF ACCOUNTING AND ADVISORY SERVICES COMPATIBLE

The article by Luis V. Manrara in the November 1949 issue of the *N.A.C.A. Bulletin*, entitled "We Are Dragging Our Anchor—The Drift from Historical Cost" touches a very fundamental issue in accounting circles. I am thoroughly in agreement with the view expressed by the author in this article and would like to add another log to the fire he has kindled.

Some accountants have been known to apologize because they felt that too much of their work was historical. The basic functions of accounting were originally conceived to be the accumulation and summarizing of data and presentation of reports and like resulting information. In order to stay within bounds prescribed by these functions, accounting work must deal with data and costs as they actually exist. Unquestionably such nonhistorical areas as budgets, break-even points, and standard costs fall within the realm of accounting work, but the accountant can be criticized when he permits nonhistorical factors to influence the content of balance sheet and income statement.

The proper scope of accounting is influenced by its place in the organization structure of the business. Most businesses have a line-and-staff type

of organization. Accounting is a staff department. Such a department "advises or assists the line organization to which it is attached, or other chains of command, in the organic function of creative planning, or by rendering some technical facilitative service."—R. C. Davis, *Industrial Organization and Management*, 1940. The staff executive's responsibilities include investigating, advising, and interpreting. The accountant is clearly not a line executive. Rather, he serves in a technical and advisory capacity. It deserves to be emphasized that the accountant should feel responsible for an accurate job of recording profit. It is the task of the line executive to direct the business to produce the profit. The activities of the accountant should not be expected to provide the profit nor to hide it from interested parties.

GEORGE J. EBERHART, *Wabash Valley*

III. BUT THERE IS A PLACE UNFILLED

In his article, "We are Dragging Our Anchor—The Drift from Historical Costs," in the *Bulletin* for November 1949, Luis V. Manrara has taken a position with which I cannot agree. I must say that I have considerable respect for Mr. Manrara, for his years of experience, for his ability, and for his courage. By taking this singular stand on accounting, he leaves himself subject to heavy fire from accountants in many fields. Unless he means public accounting only when he refers to accounting, there are many statements that one can criticize. The potential cry of dissent must be readily apparent to anyone reading the article.

First, Mr. Manrara is quite generous in referring to an accountant as a "versatile and well-informed individual." He then attempts to shut that individual up in a cage where the opportunity to exploit that versatility is nonexistent. Mr. Manrara asks that we perpetuate the accountant of thirty years ago. He does not feel that the recent developments in accounting techniques have been either valuable or permanent. He apparently wants accountants to sit back while a yawning need is left unfilled. That need is for a *greater* application of the concepts of accounting to those of economics rather than complete separation.

My suggestions for the profession, in the pattern of Mr. Manrara's, are as follows:

1. Recognition that the basis of accounting is service and integrity.
2. Exploration of all accounting principles with the purpose of constructive change.
3. Disclosure of the effects on accounting presentation of the vicissitudes of a dollar of uncertain value.
4. Improved accounting terminology (as suggested by Mr. Manrara).
5. A declaration that the accountant's environment brings him close to economics and that he is not properly ignored when others are seeking economic truths.
6. Readiness to cooperate with businessmen, economists, and financial analysts in drawing conclusions regarding future economic changes.

Should it be otherwise?

J. KURZMANN, *Newark*

IV. DIAGNOSIS OF BUSINESS ILLS A PROPER ACCOUNTING FUNCTION

Thanks to Luis V. Manrara for his forthright article in the November 1949 *Bulletin* entitled "We are Dragging Our Anchor—The Drift from Historical Cost." Although I do not agree with him in many respects, such frank expressions among us of our concept of principles will help to keep our house in order and will help accountancy to maintain its high professional status.

I fully subscribe to the principle that historical cost is the basis of accounting, but I do not agree with Mr. Manrara when he states: . . . "It would have to be definitely admitted and announced that accounting is nothing more nor less than a careful, methodical, classified recording of past economic events . . . From there on businessmen, economists, and financial analysts can make their own deductions on the possible effects of future economic changes and can adopt or recommend the policies they deem adequate to cope with prognosticated events." Certainly our doctor would not leave us at such a point. Neither would our attorney.

Without proper accounting no modern business can survive. Fully realizing this, the accountant today is not a man with a green eyeshade on a high stool but a businessman who continually has a "cardiograph" applied to the heart of business, his finger on its pulse, and who keeps himself well-informed generally. It is his professional duty to diagnose and prescribe for the welfare of his business and to draw attention to certain symptoms, favorable or unfavorable, which may affect its life.

HENRY F. GUNTHER, *Kansas City*

V. NO NEED TO BACKTRACK ON ACCOUNTING PROGRESS

The article "We Are Dragging Our Anchor—The Drift from Historical Cost", by Luis V. Manrara, published in the November 1949 *N.A.C.A. Bulletin*, seems to suggest in the six steps proposed that accounting revert to a bookkeeping status and that the strides made in the service of accountants to management and industry in the past decade be lost. It seems to suggest also that analytical work be transferred to the province of economists aided by bookkeepers to record the historical data.

It is among the duties and purposes of accounting to present the true facts in a financial statement. With respect to inventories purchased and on hand for resale or to be converted into a product for sale, I believe it is logical to carry them at cost. However, this "cost" of inventories should reflect also an element of current value, that is, a conservative value. Surely an accountant is expected to establish procedures, make adjustments, etc., relative to recording the costs of inventory used or sold and to make sure that inventory on hand is stated at a proper value. This will require more than the recording of historical costs. The accountant who has a broad first-hand knowledge of the accounts surely is better prepared to make these adjustments and interpret them than an outside economist.

Relative to plant and equipment, these assets are on hand, not for sale but for use over their estimated life period. I agree that the accounting for these assets should be based on cost and that the depreciation should reflect the recovery of cost and not replacement value. However, here again the

accountant is expected to reflect annual depreciation on a rational basis and provisions may well vary in differing circumstances to give recognition to hours of use of equipment during a particular period.

While we, as accountants, need to guard our professional standards, let us progress as management advisers and not revert to a bookkeeping status.

E. C. ROGNESS, *Portland*

VI. TWO MAJOR RESPONSIBILITIES TO BE SHARED BY ACCOUNTANTS

The article by Luis V. Manrara, "We are Dragging Our Anchor—The Drift from Historical Cost" in the November 1949 *Bulletin*, is of extreme importance at present, not only in the specific problems it discusses but also in the further thought which it can not help but provoke. I can not agree in total with Mr. Manrara's position that an accountant's chief and perhaps only duty is to record and interpret historical costs.

The position of the industrial accountant in the present complex business organization and rapidly changing economic conditions demand that he also interpret possible courses of management in terms of the future effect on profits. This responsibility is present, not because of the particular capabilities of the accountant but because it is a necessary function which is essentially an accounting function. Furthermore, the function of cost control, or at least that phase of cost control which measures actual operations against predetermined standards and thus points out where excessive costs have been incurred, is becoming more and more a very important part of the industrial accountant's work. As a matter of fact, in many cases the functions of interpreting the effects of future action and of sharing in cost control are the functions to which the industrial accountant must devote most of his time and attention.

However, the urge to perform these functions well does often serve to lead the industrial accountant into methods or practices which are not in accordance with good accounting practice. Inventory valuations, the demarcation between capital and expense items, depreciation and amortization policies, and even the classification of expense items, often assume entirely different aspects when reviewed in the light of forecasting or cost control or tax advantage rather than the light of historical recording. It is all too easy to rationalize departures from accepted practice in such instances. The end secured seems to justify the means used. Mr. Manrara indicates that he believes a rationalization of this sort has occurred in respect to certain inventory practices based on an effort to maintain smaller fluctuations in earnings. Regardless of what may be thought of this point, it does highlight the fact that accounting principles have been altered by a force other than the desire to record historical cost. Perhaps it is important to note this as not *necessarily* undesirable. If a practical viewpoint can effect this result in the financial accounting field, it would seem to follow that the industrial accountant's viewpoint can have an effect on the accounting procedures of his company.

GEORGE R. WHITE, *Toledo*

THE PUSH FOR PENSIONS—IMPORTANT CONSIDERATIONS IN DEVISING AND QUALIFYING A PENSION PLAN

by PAUL G. ROHLFING
General Partner, Wall, Cassel & Groneweg,
Dayton, Ohio

Following observations on the picture presented by current emergence of negotiated pension plans in larger companies in principal industries, this paper offers a summary check list of matters which should not be overlooked in the course of establishing a particular plan. Several types of plans are recognized and described, and provisions necessary to the qualification of company contributions to plans as deductions for Federal income tax purposes are likewise given brief statement.

THE closing months of 1949 represented a period of marked activity on the pension front—largely with respect to plans devised in negotiated settlements between management and labor. In one key settlement the Goodrich Tire & Rubber Company and the CIO rubber workers' union agreed to amendments of an existing plan. The company is to pay up to ten cents an hour, with employees contributing. The total pension provided for, coupled with social security benefits available to the participants, would amount to from 25 to 35 per cent of average monthly pay of individual workers since 1937. It is expected that the pension of the worker at age 65 with 30 years of service will be, when added to social security, in excess of $100 per month. Agreements on pension plans without employee contributions have been effected in the steel industry and this is true also of the auto industry. The auto workers' union in the Toledo area has proposed a community-wide pension plan, involving 125 employers, for 50,000 members in the area. The plan contemplates payment of 10 cents an hour by employers to a jointly-managed pension fund which would take over existing company pension plans.

The Ford Settlement

The most notable settlement has perhaps been that under which Ford Motor Company and the CIO auto workers settled on a pension plan effective on March 1, 1950. The maximum monthly pension provided for is $100, inclusive of social security benefits. The company will pay the entire cost but its contribution will be

limited to 8¾ cents per hour. This, coupled with the 1¼ cents per hour the company is already contributing to social insurance, will make up the ten cents an hour benefit package many unions are seeking from employers today.

Retirement under the plan is optional with the worker at 65, mandatory at 68. If he chooses to continue working after 65, he gets no additional benefits. With the company's consent, a worker with 30 years of service may retire at 60 with reduced benefits. If he is totally or permanently disabled at or after age 55 and has 30 years of service, the worker is entitled to a flat benefit of $50 monthly from the plan. However, this benefit would be adjusted for social security benefits under any new disability provision in new legislation.

There are three provisions in the contract which cut down Ford's cost in connection with pensions:

1. No employee has any vested right in a pension before he has acquired 30 years of credited service or has reached the age of 65.
2. There are no death benefits under the plan.
3. The plan contemplates an over-all benefit inclusive of primary social security benefits and is predicated upon a maximum service period of 30 years. Benefits are scaled down proportionately for less service.

If a worker has less than 30 years of service at 65, the benefit paid by the company is reduced so that the over-all retirement benefit is proportionate to the length of service. For instance, for the 30 years he would receive $100 pension less $40 paid from social security, which would leave $60 of the benefit to be paid by the company pension plan. If, however, he has only 20 years of service at that time, his over-all pension benefit becomes $66.67 or two-thirds of $100. Thus, the company's pension benefit pay a month would only be $26.67, since his primary social security benefit would still be $40. A worker with only ten years of service would receive nothing from the pension plan—his benefits would be derived from social security alone.

What Now?—Individual Company and Public Policy Angles

The Steel Fact Finding Board's report underlying the course of negotiations between companies and unions in that industry and

the Ford settlement, raise the question, "Where do we go from here?" These two instances have added pertinent facts and evidence to the accumulating necessity for a pension plan. However, the general answer to those who wish to go about establishing one is still the same: Study your own basic problem and then develop a plan which meets your requirements, not only for the present but for the future as well, with both management and employees having a full understanding of the provisions of the plan and the reasons for such provisions.

The fact finding board's report is not without controversial content. Among other things it states as follows, "Social insurance and pensions should be considered a part of normal business costs to take care of temporary and permanent depreciation in the human machine," and adds, "this obligation should be among the first charges on revenue." These statements raise the question as to whether or not it is sound public policy to have employers act as insurers for their employees. Further, it raises questions relating to the casual worker, the older employees whose insurance rates would be higher, and the many who will lose their connections through liquidations and business failures. The board's statement, viewed as a statement of principle, is by far more significant than the pension proposal which accompanied it. Some employers had felt that it would be many years before they would be confronted with the decision as to what to do about pensions and other benefits of this type for their employees. It appears that many of the larger companies are being forced by union action to make the decision, however untimely. This compulsion dates back to the Inland Steel case on which pensions, welfare programs, etc., were ruled to be subjects for collective bargaining.

Rapid Increase in Tax-Qualified Pension Plans

A quick review of the recent history of pension and retirement plans seems appropriate at this point. At the end of 1941, there were about 1,500 tax-qualified pension and profit-sharing plans in effect. The last official figures showed a total of 9,370 plans qualified under Sec. 165(a) of the Internal Revenue Code for the period from the effective date of the Revenue Act of 1942 to August 31, 1946. These included differing types of plans in the following proportions:

	Number of plans	Approximate percentage
Pension and annuity plans	6,815	72%
Profit-sharing plans	2,474	27%
Combination pension and profit-sharing	47	
Stock bonus plans	9	1%
Combination stock bonus and profit-sharing plans	25	
Total	9,370	100%

Reliable estimates indicate that the above total has been increased to 12,500 approved plans at the present time. If these estimates are accurate, approximately 100 plans per month have been approved since September 1, 1946. Since 1942 only 711 employers have asked the Bureau of Internal Revenue what effect termination of a plan would have on its prior qualification and 401 requests for ruling as to curtailment of plans were submitted.

Five Types of Plans: Twelve Fundamental Considerations

Because there are a number of principal types of pension plans, it may be of interest to distinguish each by discussion of a few of its major features:

1. *Group annuity method*—Under this plan of providing pensions, the employer purchases annually for each employee participating in the plan a unit of single premium deferred annuity which will cover the retirement payment attributable to a particular employee's service that year. Each year's purchase is a completed transaction. If required by the plan, additional units may be purchased to provide for past service credits whenever the employer's financial position permits. No death or disability benefits are provided by the annuity contract. However, group insurance policies, disability, and hospitalization can be provided for by separate contracts included in the same "package." The purchase of annuity units may be suspended when earnings do not warrant continuance.

2. *Individual retirement annuity*—When this plan is used the employer purchases a separate contract in the name of each covered employee, which will provide the retirement income contemplated. This type of plan usually requires

a trustee who retains ownership of the policies until retirement of the participant. Such policies usually include death benefits and are purchased on a level annual premium basis. If the premium payments are not made, the policy lapses or is commuted to a paid-up contract for reduced benefits.

3. *Group permanent plans*—These plans combine group life insurance with group annuities into one contract on a level premium basis arranged to meet the circumstances of the employer. A trust is usually not necessary in this type of plan. A provision may be included under which a major part of the premium can be suspended during periods of low earnings.

4. *Self-administered plan*—This involves the formation of a trust, individual or corporate, to which the employer makes contributions. The funds are invested by the trustee and either paid out to the retired employee or used to purchase an annuity for him at retirement date. This type of plan is better adapted to a large company than a small one. The employer does not guarantee a definite pension. If the actuarial computations fall short of providing the contemplated pension, the benefits may be scaled down.

5. *Profit-sharing plans with pension features*—Plans in this category are usually trusteed plans in which funds are accumulated until retirement date at which time individual annuities can be purchased with the participant's vested interest. These plans do not provide a predetermined pension, which is perhaps the real function of a pension plan.

In choosing a plan, there are a limitless number of alternatives to be studied and each will produce a different effect, both on the liabilities under and the benefits to be provided by the plan. Each company must analyze its own position, determine its objectives, formulate a policy, and develop a program. Among the matters necessary to be considered are the following:

1. Are employers' contributions to be related to profits, production, fixed benefits, or variable benefits?

2. What will the employee contribute?

3. What form is the plan to take? Is it to be funded by creating a trust or by purchasing group or individual insurance policies? When a trust is created, payments are made to trustees who accumulate funds and invest them as provided in the plan. If the plan is to be a pension plan, an actuary should determine the amounts of contributions payable based on age at retirement, age at inception (past service), eligibility requirements, etc., of participants, so that the plan will be considered actuarially sound. Where insurance is purchased, these actuarial problems will usually be handled by the insurance company.

4. What is to be the scope of coverage? Will the plan include only salaried workers, only those earning in excess of $3,000 ($3,600 under proposed social security law), or will it have some other limitation?

5. What will the eligibility requirements be? A minimum period of service is usually required for entrance into a plan. Length of service is considered for past service benefits.

6. Shall there be provision for employees retired through permanent disability? Are any death, hospitalization, or sick benefits to be provided?

7. What is the normal retirement age in the industry? Will retirement be compulsory under the plan? Is earlier retirement to be allowed?

8. When will interests in pensions vest in the employee? It is notable that the employee has no vested interest under the Ford plan until after thirty years of employment. Under many profit-sharing plans interests may vest in employees over a period of time at levels depending on years of participation, i.e., two years, 10 per cent; three years, 20 per cent; etc.

9. What will the amount of the pension or retirement benefit be? How much can the company afford presently and in terms of future commitments?

10. Does the plan qualify under the Internal Revenue Code Sections 165(a) and 23(p)? Formal approval cannot be

obtained until after the installation of the plan. However, informal rulings can be obtained. Employers' contributions to qualified pension and retirement plans are deductible items for Federal income tax purposes. Ordinarily, when benefits are deferred, no question of overtime payments will be raised under the wage and hour law. (Fair Labor Standards Act.)

11. Has stockholder approval been secured?

12. Has provision been made for termination of plan?

Requirements for Qualifying a Pension Plan

The matter of taxation is of major importance in the consideration and selection of a pension plan. In general, if a pension or profit-sharing plan meets the requirements of Sec. 165(a) of the Internal Revenue Code, the contributions of the employer are deductible under Sec. 23(p) on his Federal income tax returns. Further, the contributions of the employer do not constitute taxable income to the employee until distributed or made available to him. If the full distribution of the employee's interest due to retirement or separation is made in a single year, it is taxable to him as a long-term capital gain. If the distribution is made over a period of years it is considered regular income or, in some cases, is taxed as an annuity.

The general requirements for qualifying a trust under Sec. 165(a) of the Internal Revenue Code are as follows:

1. The plan must be for the exclusive benefit of employees or their beneficiaries. A specified minimum percentage of employees must benefit by the plan and the eligibility, coverage, contributions, or benefits must not discriminate in favor of officers, shareholders, supervisors, or highly-paid employees.

2. The sole purpose of the plan must be to offer the employees (or their beneficiaries) either a share of the profits of the business or an income after retirement.

3. The plan must be permanent.

4. The plan must be in writing.

5. The plan must be communicated to the employees.

6. The plan must be complete.

7. It must be impossible under the trust instrument for any of the trust corpus or income to be used at any time other than for the exclusive benefit of the employees or their beneficiaries.

8. The contributions to the trust must be for the purpose of accumulating funds for distribution to employees or their beneficiaries according to a plan qualified under Section 165(a).

9. The trust must be valid and existing under controlling local law.

10. Certain information must be filed annually.

Section 23 P(1)(A) of the Internal Revenue Code is the section which provides for deduction of contributions to a pension trust, which is exempt (qualifies) under Section 165(a), in an amount not in excess of five per cent of the compensation of the participants plus any excess necessary to provide the remaining unfunded cost of their past and current service credits distributed as a level amount or a level percentage over the remaining future service of each employee or an amount equal to the normal cost plus ten per cent of past service credit cost. Provision is made for variation in this rule under certain circumstances. Further, it is provided that an amount paid in excess of the amount deductible in a taxable year may be carried forward and deducted in later years. Section 23 P(1)(B) provides for deduction of amounts paid toward purchase of retirement annuities under a plan which is exempt under Section 165(a). Section 23 P(1)(C) provides for deduction of amounts contributed to stock bonus or profit-sharing trusts exempt under Section 165(a) in an amount not in excess of fifteen per cent of the compensation of the participants. Any excess amount paid in a current year may be carried forward in order of time and deducted in a subsequent year.

Section 23 P(1)(D) Code provides for deduction of amounts contributed to plans which do not qualify under Sec 165(a) if the employee's rights are nonforfeitable at the time the contribution is made. Section 23 P(1)(F) provides for combinations of plans under (A), (B), and (C), and limits the total contribution deductible to 25 per cent of the total compensation of participants.

ASSEMBLING AND REPORTING EMPLOYEE SERVICE DATA FOR ACTUARIAL USE IN DEVISING A PENSION PLAN

by NORMAN F. YOUNT,
Chief Accountant, Steel Division, Copperweld Steel Co.,
Warren, Ohio.

Making use of pension plan participation requirements considered to be typical in the light of recent negotiated agreements, the author of this article outlines a procedure for obtaining and grouping the names of, and pertinent classified information regarding, those who will become "present and potential" pensioners under a plan upon its installation. The data so assembled is basic to the work of actuaries in determining liabilities related to benefit proposals and serves to undergird participation records when a pension plan has been adopted.

WITH the tremendous impetus to pension programs fostered by the recently executed labor agreements in the steel and automotive industries, many accountants are faced for the first time with problems about which not too much is generally known. While the establishment of pension plans is based upon broadly-drawn administrative policies, it quite naturally falls to the lot of accountants to be called upon to present data which will be required and to assist in many practical aspects of plan installation.

One of the first steps in the establishment of a pension plan is the surveying of personnel records to learn basic facts about the employees and the summarization of those facts, in form suitable for use by the actuarial consultant, insurance company, or other agent to whom may be entrusted the specialized responsibility for designing and installing the program. The personnel department must, of necessity, perform much of the work connected with this survey. However, the accountant can play a very significant role by assisting in outlining the procedure to be followed in collecting and assembling these data, including the preparation of final reports by use of tabulating equipment, if available. It is with this phase of the work that this study is concerned.

For purposes of this paper only pension programs relating to hourly wage personnel are considered, inasmuch as such pension programs generally do not vary as greatly from company to com-

pany as may pension plans for salaried personnel. However, if a pension program for salaried personnel is currently contemplated, the procedure as set forth herein may be adapted with minor revisions and modifications.

Present and Potential Pensioners

The question that is uppermost in the minds of many accountants at this time is "What will management want in the way of figures and other data necessary to the establishment of a pension plan?" The detailed answer to this question will vary among plants, but generally the first information that the accountant will be called upon to furnish will be the personal information and earnings history for each employee who is or may become a participant in or beneficiary of the proposed pension plan. However, before the accountant can take steps to assemble this information, the phrase "who is or who may become a participant" must be defined. With respect to the hourly wage personnel generally, this definition may be found in the pension agreement which it is becoming more and more frequently the practice to embody in and make a part of the labor contract.

A typical pension agreement refers to those employees who would immediately begin to draw benefits under a pension plan as "present pensioners" and defines this group as consisting of:

1. Every living person receiving or who would have been entitled to receive a pension under any pension plan of the company in effect currently and who, on the date of his last employment with the company, was in a bargaining unit represented by the union.
2. Every living person whose service with the company has been or shall have been terminated (again limited to those who on the date of such termination or last employment with the company were in a bargaining unit represented by the union) prior to the effective date of the pension plan
   (a) Because of his permanent and total disability after fifteen years of continuous service,
   (b) After such person reached the age of 65, then having 25 years of continuous service.

Taken in its entirety this definition of present pensioners establishes the broad limits of participation of personnel who are no

longer actively at work. The entire personnel actively at work represent potential participants in the plan contingent on qualification with respect to continuous service. A typical pension agreement provides that an employee who has fifteen years of continuous service and has attained the age of 65 is entitled to retire and to receive a pension. Similarly, any employee who has at least fifteen years of continuous service and who becomes totally and permanently disabled, or who for any other reason shall retire with the consent of the management, is entitled to receive a pension in the typical instance.

It will have been noted that "continuous service" is a factor in eligibility. What constitutes continuous service is generally set forth in the labor contract, if one governs the terms of the pension plan, and it is frequently defined as dating from "... an employee's original date of employment and continuing to accrue so long as the employee is actively employed, compensably disabled, laid off for less than two years, or noncompensably disabled under the care of a qualified physician for less than two years." Thus, it can be seen that temporary layoffs on account of illness or reduction of forces are not considered as interruptions in continuous service unless the layoff extends beyond the two-year period or, of course, if the employee fails to return promptly after having recovered from illness or fails to accept employment when offered. Another absence that generally does not constitute a break in continuous service is absence to serve in the Armed Forces of the United States.

From the foregoing it can be seen that data must be assembled with respect to past and present hourly wage employees who fall in one of the following categories:

1. Actively at work.
2. Laid off temporarily within the preceding two years (or other period which may be specified in the contract) in connection with reduction of forces, illness, etc.
3. Permanently disabled but having at least fifteen years continuous service prior to such disability.
4. Not actively at work due to injury or illness compensable under the existing workmen's compensation regulations.
5. Retired after reaching the age of 65 and having at the time of retirement at least 25 years continuous service.
6. Currently on leave of absence to serve in the Armed Forces of the United States.

Required Information About Individuals

Having determined the personnel about whom data are required, the next question to be considered is "What information is necessary with respect to each employee who qualifies as a present or potential pensioner?" This information may differ slightly, depending upon the organization engaged to design or establish the actuarial basis of the pension plan, but generally the information required is:

1. Employee identification (clock or badge) number.
2. Social security number.
3. Sex.
4. Date of birth.
5. Date of hire—This date refers to the date from which seniority or continuous service is determined.
6. Pay status—This refers to present working status (i.e., actively at work, inactive with seniority rights, retired because of age, retired as totally and permanently disabled, etc.)
7. Basic rate of compensation—For hourly wage personnel this is the average hourly straight-time rate including incentive earnings (shift differential, tonnage piecework, etc.), if any, for a representative current period. For salaried personnel, this is the base monthly salary excluding discretionary year-end bonuses.
8. Valuation year—This is often referred to as the "insurance year" and is determined by adding six months to the individual's birth date. The valuation year for employees born prior to June 30 of any given year is identical to the year of birth. The valuation year for an employee born between July 1 and December 31 of any given year is the year of birth plus one.

Determination of Average Employee Hours

In addition to the above-listed data to be assembled for each employee individually, the average number of hours that an employee will work during an average year must be determined. Plants with well-settled operations may determine this by averaging the number of hours worked per employee over selected prior years. However, many plants have seen such changes in their

operations, both during and since the recent war, that it is difficult to say that the number of hours worked during any one year or any group of years may be representative. One plan which may be followed is to consider the first nine months of 1949, adjusted to a yearly basis, as being the representative year for purposes of the survey. This is being done in a number of instances. Of course, actuarial firms have data with respect to the average work year within a specific industry and many companies are using such an industry-wide average.

Assembling the Data from Payroll and Personnel Records

The procedure to be followed in assembling the required data depends on the amount of information that is currently available. In a great many instances, a considerable portion of the data has already been punched into tabulating cards in connection with regular payroll procedure. In the present study, it is assumed that payroll information (employee name, clock or badge number, social security number, straight-time hours worked, overtime hours worked, and total earnings) is available. It may be necessary to produce a new card from several existing cards in order to get this information in one place, but this task can be accomplished mechanically and is not likely to be unduly arduous.

By listing the cards containing the employees' earnings for the year 1949, a tabulation of all active employees as well as those who have become inactive during the year is obtained. This tabulation should show all the payroll information detailed above and should be prepared on paper of sufficient width to provide space for the insertion of additional data.

The cards containing the employees' earnings for the year 1949 are next collated with the cards showing employees' earnings for the year 1948 and the matching cards are eliminated from the latter group, which then consists of cards for employees who received earnings during 1948 but did not have earnings during 1949, i.e., those separated during 1948. This matching can be accomplished mechanically but, unless the employee turnover rate has been very high, it is generally just as practical to eliminate the matching cards manually. A tabulation is prepared of the unmatched 1948 cards like the one prepared from the 1949 cards.

The two tabulations which have now been worked up represent a listing of all employees who are:

1. Actively at work.
2. Laid off temporarily within the preceding two years due to illness, reductions of forces, etc.
3. Permanently retired during the last two years because of age or total and permanent disability.
4. Permanently separated during the last two years for other reasons such as death, resignations, etc.

However, we have not as yet covered the ground with respect to present pensioners. To locate all of these, we must include in our listing employees who have:

1. Retired prior to 1948 because of age or total and permanent disability.
2. Resigned prior to 1948 to enter the Armed Forces of the United States.
3. Suffered a compensable illness or injury and are inactivated thereby.

The basic information with respect to these groups can be obtained from the personnel department and listed manually in a form similar to the tabulations.

The tabulations and the manually-prepared schedule are then compared with personnel records and notations are entered on the former to indicate the additional information needed, i.e., the employee's sex, race, date of birth, date of hire, date of separation, if any, and the reason therefor. This date should be entered on the tabulations in such sequence as to facilitate subsequent punching procedure. To expedite this phase of the work, codes should be assigned to the various factors, as follows:

Sex
- 01 Male
- 02 Female

Race
- 01 White
- 02 All other

Pay status
- 01 Actively at work
- 02 Inactive — reduction in force

Pay status (cont'd)
- 03 Inactive—temporarily disabled or compensably ill or injured.
- 04 Inactive—military leave
- 05 Inactive—permanently disabled
- 06 Inactive — retired due to age
- 07 Inactive—resigned
- 08 Inactive — discharged for cause
- 09 Inactive—deceased

The valuation year for each employee and the employee's average hourly straight-time rate is determined and entered on the tabulation in the appropriate spaces. The tabulations are now returned to the tabulating department for further processing.

The cards from which the original tabulations were prepared are reproduced without the current payroll data. Into the new cards are punched the data (or code therefor) which has been manually entered in the personnel department. It will be necessary to punch complete cards for those employees listed manually by the personnel department as having retired prior to 1948 or currently on military leave.

Sorting the Cards for Actuarial Study

After the punching and verification has been completed, the file is sorted by pay status code, which will result in nine groups of cards representing those employees in each of the pay status classifications shown above. From this point on, the cards in groups 07, 08, and 09 can be eliminated from any further processing inasmuch as they contain information relating to employees who have died, resigned, or have been discharged for cause and thus need not be considered further with respect to the pension plan.

The cards in group 01, representing employees actively at work, are sorted by basic rate of compensation and manually segregated between employees who are expected to receive earnings in excess of $3,000 in an average year and employees who are expected to receive earnings of $3,000 or less in an average year. The hourly rate used as a dividing line to accomplish this segregation is the rate which, when multiplied by the average number of hours an employee will work during an average year, will compute to $3,000.

Groups 02, 03, and 04, the cards representing employees inactive temporarily because of reduction of forces, temporary disability, or military leave, are sorted together and divided in the same manner as group 01. Groups 05 and 06, the cards representing employees permanently inactive because of retirement by reason of age or permanent disability, are likewise sorted together.

After completion of these sorting operations, the cards are in six groups as follows:

Group A—Active employees—Compensation over $3,000 per year.
B—Active employees—Compensation not over $3,000 per year.

C—Temporarily inactive employees—Compensation over $3,000 per year.

D—Temporarily inactive employees—Compensation not over $3,000 per year.

E—Permanently inactive employees—Compensation over $3,000 per year.

F—Permanently inactive employees—Compensation not over $3,000 per year.

From this point on, each of the above listed six groups is processed independently and separate reports are prepared for actuarial study.

Clock number	*Employee*	*Social security number*	*Valuation year*	*Date of hire*	*Date of birth*	*Sex*	*Average hourly rate*	*Card count*
21	Johnston M B	707 09 6604	01	1 1 38	1 10 01	1	$1.50	1
2	Brown J H	278 10 4078	01	3 6 38	2 1 01	1	1.50	1
33	Smith J M	281 12 1320	01	4 5 39	4 15 01	1	1.50	1
14	Black W B	272 05 9351	01	3 8 39	6 15 01	1	1.51	1
51	Cole J C	272 05 5125	01	12 6 40	5 16 01	1	1.51	1
106	Crawford S M	308 09 7252	01	1 1 41	3 14 01	1	1.50	1
72	Abel W A	271 07 3628	01	1 1 41	4 18 01	1	1.50	1
28	Cox W C	278 07 4486	01	12 1 42	5 31 01	1	1.50	1
91	Davis W W	296 01 9780	01	1 3 43	4 15 01	1	1.58	1
10	Evans J C	295 01 6390	01	3 8 43	1 18 01	1	1.60	1
111	Young W O	278 07 3290	01	6 9 43	12 30 00	1	1.75	1
120	Union E E	711 16 0759	01	10 1 43	6 29 01	1	1.80	1
46	Taylor M I	278 05 9614	01	6 1 45	8 1 00	1	1.60	1
52	Morgan C C	278 07 1068	01	1 1 47	11 30 00	1	1.53	1
(Total for valuation year 1901)			14	582			21.88	14
18	Norden C A	296 10 4959	02	6 3 40	6 10 02	1	1.51	1
27	Osberg A D	283 07 4189	02	7 1 42	10 1 01	1	1.63	1
5	Phillips T W	371 03 5487	02	8 6 46	9 8 01	1	1.75	1
(Total for valuation year 1902)			6	128			4.89	3
108	Bradford W D	298 10 7858	03	7 1 42	8 1 02	1	1.55	1
29	DeLuca A B	360 16 6540	03	11 1 46	10 14 02	1	1.65	1
148	Ventura S S	302 12 8334	03	1 1 48	1 10 03	1	1.80	1
96	Howard H H	288 20 0516	03	3 1 49	8 1 02	1	1.54	1
(Total for valuation year 1903)			12	185			6.54	4
81	Cohen M M	336 92 9940	04	11 1 37	10 18 03	1	1.55	1
19	Fleming W E	214 04 0022	04	5 14 42	6 27 04	1	1.68	1
(Total for valuation year 1904)			8	79			3.23	2
17	Gordon H A	181 18 2609	05	6 1 38	9 1 04	1	1.55	1
103	Irving W J	192 09 9011	05	7 2 41	5 31 05	1	1.62	1
126	Madden R W	302 12 8150	05	1 2 48	6 15 05	1	1.54	1
(Total for valuation year 1905)			15	127			4.71	3
(Total 1901 to 1905 incl.)			55	1101			41.25	26

EXHIBIT 1

Tabulation for Report to Actuaries

Each of the above groups of cards is sorted, first to valuation year, next to date of hire within each valuation year, and then by sex. A tabulation is then prepared of each group showing:

1. Employee identification (clock or badge) number.
2. Social security number.
3. Sex.
4. Valuation year.
5. Date of hire.
6. Date of birth.
7. Average hourly rate.

The tabulation may also show the employee name, should that information be desirable for the company's use, although it is not necessary for the actuarial studies. The tabulation will show the following totals for each valuation year:

1. Average hourly rate.
2. Year (not date) of hire.
3. Valuation year.
4. Card count.

In addition, there should be shown intermediate totals for valuation years in five-year groups, starting with 1870 through 1875 and running up to date. It is not practicable to illustrate a complete tabulation for any one group of employees. However, the abbreviated specimen tabulation shown as Exhibit 1 will serve to exemplify the type of report that this procedure will produce. Separate tabulations in the same form covering the six groups of employees must be prepared. These tabulations will present in usable form the information which will be required, generally speaking, in the making of actuarial studies preliminary to the setting up of a pension plan. Naturally there will be problems peculiar to specific plants and consideration will have to be given to the effect of such peculiarities in adapting procedures which have been outlined here and the resulting reports.

Conclusion

There are many ways in which the industrial accountant can take part in the development of his company's pension plan. In preparing these preliminary reports, he is engaged only in one of the first of such ways. The reports for the use of the actuaries represent merely the beginning of an involved process, the end results of which it is hoped will be such as to provide a thoroughly realistic, practical solution to a vexing problem in the national economy.

Payday Every Day—The Use of Staggered Payroll Periods

Editor, N. A. C. A. Bulletin:

In years past it was quite a common practice to determine the net earnings of an employee for a given period and simply to present the employee with an envelope containing cash in payment of these earnings. With the increased requirements for payroll records which accompanied expansion of industry and enactment of legislation affecting payroll handling, it has become necessary to devise new methods and systems through which large groups of employees may be paid their earnings with minimum cost to the employer.

A staggered payroll system has been put into practice by our company, which enables the preparation and distribution of payroll checks with a much more efficient use of equipment and payroll personnel than under the usual system which calls for paying all employees at the same time. Our system was first installed during the wartime production peak and has been in use continuously since then, except for a short period following the close of the war. By assigning permanent identification numbers to all employees, personnel may be divided into number groups. In our case, pay periods are of two weeks' duration, composed of ten working days, so that it was practicable to divide the total number of employees into ten groups, having permanent employee numbers within the following ranges:

Group	*Permanent employee numbers*
1	1 to 7,999
2	8,000 to 16,999
3	17,000 to 29,999
4	30,000 to 37,999
5	38,000 to 47,999
6	48,000 to 56,999
7	57,000 to 64,999
8	65,000 to 72,999
9	73,000 to 81,999
10	82,000 to 89,999

To put the system into practice, a certain day was assigned as the closing day for the first group's pay period. The second group's pay period closes the following day, and so on through the ten-day period. Seven days after the first group's pay period closes, the pay checks are distributed to all employees in this group, and successively for each group. This results in having a pay period closing and also a payday every day.

Under this arrangement, we have been able to effect a more efficient use of tabulating equipment and other office machines and personnel and to prevent peak work periods for the payroll department. Payrolls and earning distributions may be taken care of with a smaller number of employees in the payroll department. During the war the system obtained a much larger output from the limited number of machines available than was possible by having the same payroll periods for all employees.

ARTHUR L. KENNEDY, *Wichita Chapter*

A COMPANY-TRUSTEED PROFIT-SHARING RETIREMENT PLAN WITH ANNUAL DISTRIBUTION OF FUND INCOME

by MERLIN H. BIRK
Treasurer and Controller, Waukesha Foundry Co.,
Waukesha, Wis.

The mechanics of the plan which this article describes call for an annual contribution to retirement fund principal out of company profits and apportionment among plan participants of credits in this fund on the basis of a point system giving weight to pay and years of service. The presentation explains the considerations behind payment of fund income in the form of an annual Christmas bonus and illustrates the workings of the plan as a whole with the case of an hypothetical participant.

OUR pension plan, formulated during 1943 and effective as of January 1, 1944, falls in the category of profit-sharing stock bonus trust plans and has, from the beginning, been approved by both Federal and state authorities as qualifying under tax laws. Hence our contributions to it are deductions for tax purposes. Several of its outstanding features are: (1) contribution (out of profits as defined) by company only, (2) deferred payment to participants of principal credits to fund, and (3) annual payment to participants of income earned by the fund the previous year.

We are well aware that ours is not the only type of retirement plan. Many annuity and retirement plans are offered by insurance companies. As a matter of fact, these insured plans can, in many instances, offer to some beneficiaries more than our trust plan can. However, in our particular case, an insured plan would have meant an increase of twenty per cent in our annual fixed charges for the first ten years. When one is providing for employee past service benefits, retirement plan costs run high at first. It is possible with a trusteed plan to build the fund up to a point where it can pay for past service benefits at one time and pay for future service benefits on a current basis. Once this point is reached, the fixed premium expense of an insured plan is reduced considerably. Whether or not to convert to an insured plan from a trusteed plan at any time must depend upon individual circumstances.

Apportionment of Credits in Principal and Income

In our particular circumstances, we believed very strongly that our retirement fund should and could grow only as the company's operations remained profitable. Once this fact was acknowledged, a contribution formula was developed. The company annually contributes to the fund forty per cent of that part of the operating profit which exceeds ten per cent of the company's invested capital. To cite an example, let us assume that the company's invested capital, including earned surplus, is $1,000,000. Its operating profit without deduction of income taxes is $350,000. This amount, less ten per cent of invested capital, or $100,000, equals the defined profit of $250,000. Forty per cent, $100,000, is paid to the fund for the year. There is further provision that the contribution cannot exceed a figure equal to fifteen per cent of the total compensation for all employees eligible under the plan.

The trust receives the company's contribution which now has to be apportioned equitably among all eligible employees. This distribution is done on a point basis. Our plan gives each employee one point for each full calendar year of service and one point for each one hundred dollars of compensation during the year. The total points of all employees is divided into the total contribution. This determines the value of each point. Then each employee's points are multiplied by the point value and the result is his credit in the principal of the fund for that year.

To clarify this procedure a little further, it may help to apply the company contribution figures used above and the apportionment procedure outlined to an individual situation. Employee A earned $3,125 during 1949 and has been with the company since August 16, 1942. He receives 31 points for earnings and 7 points for full calendar years of employment, a total of 38 points. The point total of all participating employees, including Employee A, is 7525. Dividing this into the $100,000 aggregate company contribution determines a point value of $13.29 (actually $13.289036—when allocating it is advisable to use a figure of at least six decimal places). Employee A's credit for 1949 is $505.02 (38 x $13.29). This represents 16.1 per cent of his annual earnings. Had he been with the company only one year, his credit would have been $425.28 (32 x $13.29) or 13.6 per cent of his salary. There is merit in the suggestion that past service should receive more point value to compensate the older employees to a larger degree (in addition to one point for each full year of service). However, in

our case, we believe that this has been indirectly accomplished by the higher earnings from acquired skills and promotions.

When the year's contribution to the principal of the fund has been thus apportioned, the next job is to also apportion the income which the fund has earned during the year. Whenever the trust receives the company contribution, the trustees invest this money. Such investments must usually comply with state regulations governing funds held in trust. The interest and dividends received from such investments are put into an income account. Each employee is credited with the same proportion of the year's income that his total principal credit for the year bears to the total principal credits of all employees. At Christmas time each year, this income credit for the previous year is distributed in cash. This is an unusual characteristic of our plan, since most trusteed plans we know of provide for retention of the income and its accumulation until retirement of the participants. The annual distribution usually amounts to about five days' wages for employees of five years' service or longer.

Eligibility, Vesting, and Forfeiture

There is no two- or three-year waiting period before an employee of ours is eligible to participate in the fund. He participates during the first full calendar year of his employment. However, if he voluntarily leaves the company's employ or is discharged before he has been in the plan for five years, he forfeits all principal credits. If he leaves after six years, he has a vested interest in sixty per cent of his credit and forfeits forty per cent. In other words, after five full years he has a vested interest in half of his principal credits and receives a vested interest in ten per cent each year. After ten years, of course, all his credits are completely vested in him. We suggest this procedure, rather than to have an employee wait two or more years before he participates, which has a certain undermining effect upon his morale. Yet our plan, requiring five years' participation before vesting, avoids giving undue advantage to employees who are not stable.

All forfeitures are applied each year against the company's contribution and are redistributed among the remaining employees. The plan is so set up that, if and when an employee is laid off because the company has no work for him, he will forfeit nothing. If, after two years, he has not been rehired, we pay him his principal credit in five equal annual installments if he so desires. An

employee who leaves the company of his own accord but has been with the company over five years and thus retains part or all of his vested credits is also paid these credits in five equal annual installments starting two years after severance.

Many plans provide that an employee be paid his vested credit immediately upon termination of employment. We believe that such a procedure defeats one of the purposes of a vesting retirement plan, i.e., to stabilize the working force and reduce costly turnover. Many an employee will be tempted to quit his job under special conditions arising in his personal life if he knows that he will receive a lump sum payment of some size within a few days. In a plan under which the employee, himself, contributes to the fund, an immediate refund of such contributions is, of course, appropriate.

Delayed Appearance of Marked Employee Relations Benefits

The question is asked why we do not allow the employee to contribute to the fund. Again, our reply must be prefaced with the comment that decisions of this type depend upon individual cases. In our company, the employee pays for all of his accident, health, hospital, and surgical insurance coverage. In other words, the employee provides for his own current needs. The company, out of profits, provides for his retirement or estate needs. In addition, we subscribe to the fundamental principle that a profit-sharing plan or a retirement plan should not be instituted by an employer in lieu of paying a wage commensurate with those of the labor area.

A profit-sharing plan of any type, whether for immediate distribution or for retirement benefits, should not be put into effect by an employer with the idea that it will automatically take care of his employee relations problem. Our plan was conceived by management out of a sincere regard for old and loyal employees. Had the reason been anything else, we would have been completely disillusioned during the first few years. As a rule, it is difficult for most people to visualize benefits that will accrue to them ten, twenty, or thirty years hence. Since ours is an over-all company profit-sharing plan—immediate (following year) payment as to the relatively small amounts of fund income, deferred payment as to principal—it is difficult for an individual to feel that his own daily work has much to do with the eventual contribution and his share in it. However, this does not mean that recognition of the principles of a profit-sharing plan cannot be expected from all con-

cerned. A proper public relations job is required to accomplish the desired results. We feel that our fulfillment of all the educational requirements did not come at once and we recommend to all others not to overlook the importance of this factor.

The first evidences of recognized acceptance of our plan became apparent after the third year's contribution. At that time several employees retired and immediately received their first annual payment. Designated beneficiaries of deceased employees also received payments. These incidents and the amounts of payments were discussed in the shop paper or on bulletin boards. This was not done with an attitude of "look what we are doing for you" but merely as an expression of fact and an explanation of plan procedure.

The Plan in Action: The Case of Harry Newby

In order to describe plan procedure more clearly, use may be made of the case history of one participant, an employee who has been under the plan since its beginning in 1944. Harry Newby has been an hourly employee in our foundry since 1939. He is 45 years of age. The credit in his principal account as of December 31, 1949, is $2,859.63 and his income credit is $77.21. He accumulated these credits as follows:

Year	*Annual compensation*	*Credit in principal account*	*Accumulated principal credit*	*Income credit*	*Income credit paid out*
1944.....	$ 3,317.05	$ 502.75	$ 502.75	$ –	
1945.....	3,448.99	531.61	1,034.36	34.80	12-16-46
1946.....	3,677.07	574.35	1,608.71	35.72	12-23-47
1947.....	3,755.71	601.94	2,210.65	59.49	12-23-48
1948.....	3,832.95	272.07	2,482.72	67.04	12-22-49
1949.....	3,426.49	376.91	2,859.63	77.21	12-22-50
Total.....	$21,458.26	$2,859.63		$274.26	

During the years over which the plan has been in effect, the company has contributed fifteen per cent (the maximum) of the total wages of all employees four times, seven per cent once, and nine per cent once. Harry Newby's annual credits were higher than these percentages because he received more points than the average employee because of his years of service.

Harry Newby worked a total of 13,700 hours during this period (six-day work week for several of the years) which means that his credit in the principal of the fund is the equivalent of almost 21 cents per hour ($2,859.63 ÷ 13,700 hours). We point out to all employees that the company could not guarantee even a small frac-

tion of this amount on a fixed cost plan. When the company's operations are successful the fund will grow. When such operations are not profitable, the fund cannot grow. However, it is important to point out that the fund will not decrease in value as a result of unprofitable operations of the company.

If Harry Newby should leave the company's employ during 1950, he would retain his vested credit of sixty per cent of his credit in the principal of the fund, or $1,715.78 (he vests fifty per cent at five years and ten per cent more every additional year to ten years that he is under the plan). One-fifth of this amount would be paid to him during 1952 and an additional one-fifth each year thereafter until the amount was paid in full. If Harry returned before the expiration of six months from the date he left our employ, his forty per cent forfeiture is returned to his credit and he participates as though he had not left at all. In any event, he does receive his income credit of $77.21 on December 22, 1950, as this credit was earned during 1949 when he was in our employ. If he does not return, his account will earn no more income.

If Harry is laid off because of lack of work, he will forfeit nothing. If he has not been called back for work by us after two years, Harry may draw one-fifth of his $2,859.63 principal credit in five equal annual installments without interest or fund income being added. Should he elect to have this amount held in trust, it will be credited with income which will be paid to him each year the same as to those participants still employed. Should Harry become disabled during 1950, he would retain his full credit of $2,859.63 and could immediately draw one-fifth of this amount and receive similar payments each year thereafter until the credit is consumed. If he should die, his wife, whom he has designated as his beneficiary, will receive the one-fifth payments for five years. Harry might prefer a different arrangement of payments and may prescribe such procedure for the trustees to follow.

The amounts held in our trust cannot be assigned nor are they subject to claims or liens of creditors. Neither could Harry borrow any amount of his interest in the fund. Such provisions in a plan save possible unpleasant situations for participants and trustees.

Much has recently been said and written about many retirement programs. We usually compare the results of our plan with those obtained under accepted actuarial principles on which some other retirement plans are based. Taking Harry Newby's situation, we have computed that he will receive about $40 per month Federal old

age benefits starting at age 65. Should increased social security benefits become effective, his payments would go up to $65 per month. In order for Harry to receive a monthly income of $100 at age 65, his trust fund credit must provide $60 per month under present social security benefits or $35.00 per month under the proposed program. At present Harry is assured—on the six-year figures—of about four years' benefits of $100 per month ($2,859.63 ÷ $60 per month or 47.7 months). Under the proposed social security benefits he is at present assured of a $100 income at 65 for slightly less than 7 years ($2,859.63 ÷ $35 per month or 81.7 months).

Harry has worked for the company for ten years. Only 45 now, he still has 20 years before reaching retirement age. It is a reasonable and conservative hope that Harry's benefits will grow to at least $7,200 by the time he reaches age 65. This would mean that in the next twenty years his credits will have to equal $4,300, not at all unlikely since his credits equalled almost seventy per cent of this amount ($2,859.63) during a period of only six years. The amount of $7,200 would provide Harry with $100 a month for ten years under the present social security law or for a period of seventeen years under the proposed enactment.

Employees who do not have as many years of plan coverage as Harry naturally will not receive benefits to the same amount. However, it must be kept in mind that, as has been outlined, employees participate on a point basis and points are credited for compensation *and years of service*. Some of the old-time employees accumulate large credits in this way. Then, to help these men more, we allow employees who were 56 years of age or older as of January 1, 1944, to remain working (if able), and to participate until age 70 or until nine years have elapsed since January 1, 1944, whichever comes earlier. We should mention here that the average age of the 339 employees covered by our plan is 44 years. That is why the example of Harry Newby is a fair one to cite.

Annual Distribution of Fund Income Feature

The annual distribution of income mentioned earlier has done much to bring the existence of the plan closer to all participants. We believe that such a provision in a plan should be seriously considered by others contemplating plan formulation, despite the fact that the compound interest accumulations in some other companies' plans have grown to tremendous credits for the participants on the

basis of deferred payment. Not only does an annual income check remind the employee of the much larger amount still held in trust, but it also reminds him that the size of the income of the fund depends, not only upon the continued prosperity and profits of his company, but also upon the continued stability of industry and business as a whole and particularly of those other companies whose securities the pension trust has purchased. In effect it makes him a direct stockholder in our free enterprise system.

Some Viewpoints on Profit-Sharing and Retirement Plans

Some employers are reluctant to consider profit-sharing because employees might object to company policies and procedures as adversely affecting profit and their share in it. Such objection seems to encroach on management functions. Other employers reply by saying that it is important that employees be aware of the why and wherefore of running the business. Furthermore, suggestions of improvement in methods by employees often pay off. The history of plants that have suggestion box systems reveals savings amounting to many hundreds of thousand dollars annually from employee ideas. Managements who have successfully operated with profit-sharing plans have often put it this way: "Profit-sharing does not take the place of management. Rather it increases the need for even better management." During the past several years, many men in management have accepted this challenge and are now enjoying the fruits of a successful profit-sharing plan.

Profit-sharing retirement plans in the same general group as the one which has been described are not unusual now, since it is known by many how well these programs have worked in other companies. However, it is not perhaps as clearly known that the cost of a profit-sharing retirement plan cannot be considered when establishing selling prices. Such practice would place a company in a disadvantageous competitive position. Only through efficiencies, reduction of waste and scrap, increased profitable volume, and fulfillment of all other requirements that spell profits, can and will the retirement fund grow. This writer sincerely believes that a properly administered profit-sharing retirement plan can become a line of defense for industry against the vigorous offense of those all too many forces desiring the end of the free enterprise or capitalistic system.

A CASH FORECASTING PROCEDURE FOR SMALLER COMPANIES

by ORRIN F. BRUNNER,
Controller, Ladish Co., Cudahy, Wis.

It is the point of departure of this article that a cash forecast of a practical degree of accuracy is a necessity for industrial companies, large and small, if financial trouble is to be sighted in time or idle funds properly managed. A procedure for such a forecast, containing a number of short-cut features, is outlined, reflecting methods in use in the author's company.

WHILE many businesses—depending upon their size, management policy, and other factors—appear to operate successfully with cost systems ranging from those that are relatively complete and well-designed to those that are extremely sketchy "hit or miss" propositions, without benefit of modern improvements (such as budgets) which are management "musts" to the accounting trained mind, it would seem that any business should have some adequate method of cash forecasting. Establishment of such a procedure would seem the least portion of prudence.

In an enterprise which is short of cash and resorts to borrowing, a knowledge of cash position from period to period presents itself as a matter of practical necessity. On the other hand, in an enterprise well supplied with cash, the amount available for retirement of indebtedness and investment in capital equipment, i.e., idle funds, should be watched at least as closely as the scheduling of machines in the shop. In short, the justification for a cash forecast would seem to be fairly obvious. Nevertheless, there is little written material on cash forecasting procedure, other than as a part of a budgetary program, to guide the accountant to whose lot it falls to prepare such a forecast. For this reason and with the thought that it may be of interest, this paper sets forth a method of cash forecasting developed from experience in our company.

Since a cash budget is a necessary part of any complete budget procedure, a company having the latter has no separate problem with respect to cash forecasting. This is true because the required basic figures are readily available in the budget. However,

in those companies not so fortunate as to have a complete budget, the preparation of a cash forecast is a special task and not necessarily a simple one.

Job Takes Shape in Light of Historical Study

We found that a good, if elementary, way to strike out on such a forecast is by a comparison of balance sheets at the end of several accounting periods. This was effected in our case, by setting up, first, an amplified funds statement showing in detail the sources of cash and the uses to which it was put and tying this into the net change in the cash account for each period. In preparing this statement, it was necessary to go back into past period profit and loss accounts also for changes in inventories, accrued payrolls, transactions affecting accounts receivable, and similar items.

The study disclosed basic information accounting for the net change in cash from period to period, some items of which were peculiar to our company. It was found, too, that specific categories, such as miscellaneous sales and certain expense accounts, could be forgotten or lumped together in forecasting and that the change in cash from period to period was governed by a relatively small number of items of income, expense, changes in inventories, and the like. These represented the basic items to be estimated for close results in forecasting. It was felt that the fewer the items the better. At least, keeping the governing items at a minimum made for a simpler job and the resulting forecast was more easily understood.

The principal classifications of income affecting the cash forecast were found to be sales to customers and scrap sales. The important classifications of expense showed as steel, labor, relatively fixed costs like salaries, depreciation, and taxes (which were considered as a group) and a wide run of variable and semivariable costs which it was found could also be lumped together without materially affecting the accuracy of estimates.

When the principal items covering the change in cash position had been ferreted out in this way by a backward look at experience, the next step was the determination of the period to be covered by the cash forecast to be made. It was decided that each forecast should cover three months ahead and should display a comparison of "actual" and "forecast" for the month immediately preceding. The forecast was scheduled to be revised monthly, the first two months of each three months' period being carried over

from the previous forecast if there were no significant changes. Needless to say, it was also necessary to decide upon the form of the forecast, suiting it to the executives who were to use it. For ease of comprehension estimates were made to the nearest hundred dollars. Even thousands of dollars are used in illustrations in this article, as appropriate for the purpose.

The Contributory Forecast

Once all such preliminaries had been covered, the job of setting up an actual forecast could be started. More correctly, the point was reached at which the "tools" for making a forecast could be gathered together. The preliminary work outlined to this point was a "one time" job. The gathering of tools is a recurring one. It must be done each time a forecast is made. These tools consist principally of the following:

1. *Sales forecast*—This does not mean a forecast of orders to be received but of shipments to be made in each of the coming months, because it is from shipments that cash is received in most businesses. It was found that such a forecast could be obtained better by way of the production department than from the sales department. With no budget in operation, this forecast was at first only a rough estimate by the production control supervisor. Obviously, the sounder the basis of this forecast, the more assured we could be of the reliability of the resulting cash forecast. Here, as with information obtained from other departments, continued use of the information and sufficient "selling" on the part of the accountant increased interest in developing more accurate forecasts by the production department and encouraged them to set up records and procedures necessary for reliable information.
2. *Production forecast*—This is scheduled production at sales value, used to arrive at the change in in-process inventories and the amount of labor, raw material, and other items further commented upon later. Where production figures serviceable for this purpose are not available, which may frequently be the case, other means will have to be found to gauge operations of future months.
3. *Purchasing forecast*—Here we are not interested in purchases to be contracted for or committed but rather in

Basis of Cash Forecast

	August	*September*	*October*
Memo—Estimated *net* production based on production department backlog of unproduced quantities as of 7/31/49	$1,150,000	$1,050,000	$1,050,000
Funds to be provided from operations			
Gross sales	$1,150,000	$1,050,000	$1,250,000
Less—			
Labor (30% based on April—June)	$ 345,000	$ 315,000	$ 315,000
Salaries and fixed expense	75,000	75,000	75,000
Steel (40% based on April—June)	460,000	420,000	420,000
Miscellaneous (20% based on April—June)	230,000	210,000	210,000
Decrease in in-process inventory	—	—	100,000
Total	$1,110,000	$1,020,000	$1,120,000
Balance—Profit before income taxes	$ 40,000	$ 30,000	$ 130,000
Add back—			
Depreciation, provision for real estate taxes, and other reserve provisions	25,000	25,000	25,000
Decrease in in-process inventory	—	—	100,000
Total—Estimated funds provided from operations	$ 65,000	$ 55,000	$ 255,000
Add—			
Decrease in steel inventory—estimated on basis of purchasing and production department forecasts	25,000	35,000	40,000
Decrease in accounts receivable		75,000	
Increase in accrued payroll	45,000		15,000
Total	$ 135,000	$ 165,000	$ 310,000
Deduct—			
Increase in accounts receivable—estimated	$ 110,000		$ 150,000
Federal income tax—quarterly installment		$ 110,000	
Equipment purchases per purchasing department	10,000		10,000
Decrease in accrued payroll		45,000	
Total	$ 120,000	$ 155,000	$ 160,000
Estimated increase or (decrease) in cash balance	$ 15,000	$ 10,000	$ 150,000

Exhibit 1

steel (or other raw material) and supplies to be paid for. Such payments cover not only some of the purchases to be made during the month but, to a greater extent, material being received currently and material received in the latter part of the previous month, depending upon suppliers' terms of sales.

4. *Statistical records*—A history is needed for at least the previous fiscal year on accounts receivable, sales, production, labor, material used, and other costs to serve as a basis for estimating in the current forecast.

5. *Other information pertinent to the month*—Such information comprehends receipts to be realized from maturing investments, notes, etc., and unusual disbursements for income taxes, vacation payments, and similar items.

Supporting Schedule for a Summary Forecast

With these tools available, a schedule is prepared for the months included in the forecast of funds to be provided from operations and all other sources. This analysis is always presented as a supporting schedule and is designated Basis of Cash Forecast. It is illustrated by Exhibit 1. The first item, estimated net production, is taken from the production forecast mentioned above. It represents sales value of production scheduled for the month. It is a memo item only, set out for ready reference and for use as the basis on which labor, steel, and other future costs are estimated.

The next section of the analysis shows the funds to be provided from operations and begins with gross sales from the sales (shipment) forecast. From this we deducted the four or five items of cost which have been decided upon as being the governing items. Labor, steel, and miscellaneous are computed on the basis of scheduled production, using the percentages arrived at from past months' experience. Salaries and the other relatively fixed items do not vary materially with changes in volume except over long periods. By use of recommended procedures, most companies can readily separate items of a fixed or semifixed nature from those which are of a variable nature and can estimate amounts on the basis of production, sales, labor, etc. As a matter of fact, it undoubtedly will be necessary, if volume of production varies considerably from period to period, to segregate costs into the three groups as fixed, semifixed, and variable, determining each ac-

duction, is divided by the scheduled number of operating days to determine the approximate average daily payroll. This amount multiplied by the number of days to be paid, reflecting the pay days falling within the month, gives the disbursements for hourly payroll. All other figures in the forecast are arrived at similarly and can be checked from the Basis of Cost Forecast, either individually or as a combination of two figures appearing on the preparatory statement.

It will be noted that, at the bottom of the forecast, minimum balances or what have been determined to be the desirable balances in the bank accounts are deducted from the cash balances at the end of the month to arrive at the estimated amount of available cash. This, of course, can be the amount of available cash or, just as well, the amount of cash required and to be obtained by borrowing or other means, if the minimum balances exceed the forecast balances. Attention should also be called to the fact that the second and third months of the forecast are started with cash balances representing the desirable minimum balances amount rather than with the estimated cash balance at the end of the previous month. This is done for two reasons: (1) so that the amount of cash available will be the amount available *each* month rather than a cumulative amount and (2) so that the available amount in the second and third months can readily be checked with Exhibit 1.

Naturally the example used here has been simplified to some extent. The accountant in every company will encounter problems peculiar to his company and which will have to be solved on an individual basis. However, a reasonably accurate forecast is better than none. Of course there must always be the aim of doing a better job of it.

BETTER IDENTIFICATION OF EXPENSE MATERIALS THROUGH MNEMONIC-NUMERIC CODING

by NOEL L. SMITH,
Chief Accountant, Hill Diesel Engine Corp.,
Lansing, Mich.

A multitude of papers relating to purchase and use of supplies call for their identification in writing. Because the mere number of items carried—not to mention types, makes, and sizes—seems to defy reduction to coding, the problem of simple identification is frequently side-stepped. The present article offers a coding system which seeks to overcome the obstacles and to permit more effective control of supply expense items.

THE success of any manufacturing establishment depends in large part upon its efficiency in the use of labor and materials. This efficiency in turn depends upon the degree of control exerted. One of the first steps in control measures is identification, whether of labor or materials. The necessity of a positive identification of productive material is unquestioned and the use of part numbers provides such identification in a brief, definite form for compilation of costs, production reports, price lists, and many other purposes.

It is perhaps less fully realized that a positive identification of expense stores items is equally vital if stores records are to be well maintained and requisitions correctly recorded for operating reports. However, such identification is not simple, due to the complexity of items stocked. Records are usually kept by name or description only, as if more succinct and flexible identification methods were inapplicable. A frequent result is duplication of material, the same part being carried under two or more names, either because suppliers list them differently in catalogs or because shop men have their own designations. This condition becomes aggravated if there are several stockrooms or cribs drawing stock from a central stores. It may often happen in such cases that one stockroom will be out of an item whereas another is overstocked, without mutual knowledge of the situation.

A positive system of identification for expense stores items can

be set up without undue extra work by the use of a system of item letters and numbers, which should be shown on purchase orders, receiving records, and stores requisitions. This identification will do for expense stores what part numbers do for production material.

The Structure of the Coding

The system is fundamentally a mnemonic one in which two letters provide the basis of identification. The first letter describes what may be termed the functional usage of the item. The second letter provides what might be called a brief general description of the item. Thus TD would be the general coding for drills: T (tools), D (drills). Threading dies would carry the same general coding: T (tools), D (dies).

To further identify the item within a general classification, a classification number is affixed to the code letters. Thus TD 1 would be letter drills, TD 2 number drills, TD 3 straight shank carbon drills, etc. After all items of one kind (as drills) have been classified, the next group of items within the larger group should be taken and the classification numbers continued for them. If threading dies are chosen next, for example, these might run TD 10—dies, geometric; TD 11—dies, eastern; etc. Identification is completed by prefixing a number for each item. To avoid conflict with any part numbering system already in use, it was considered advisable in the installation herein described to start the individual numbers with 10. Thus 10 TD 1 would be an "A" size letter drill, 11 TD 1 a "B" size, etc.

In the succeeding paragraphs there is offered a separate discussion of each element in the code being described.

Functional letter—The purpose of the functional letter is primarily to assist the memory in classifying an item. By a careful choice of these letters, they can also be made to correlate the item to the general factory accounting system. Expense stores may be grouped in three general classifications: maintenance, operating, and miscellaneous. Accordingly, we find the following functional letters denoting items used for maintenance:

B—Building and building equipment
D—Jigs and dies
E—Equipment (factory and office)
M—Machinery

In the operating group (of this particular installation) we find:

C—Cleaning supplies (including acids for cleaning castings)
E—Electrical supplies
G—Grinding supplies
H—Heat treat supplies
L—Lubricants, oils, and greases
P—Paint supplies, plating supplies
S—Stationery and forms, shipping supplies, tool steel and other steel used for expense work
T—Tools, perishable
W—Welding supplies

Items for general usage or not readily classifiable are grouped under M—Miscellaneous. Care should be taken to keep this group to a minimum.

Descriptive letter—Like the functional letter, the descriptive letter is to assist the memory. However, instead of correlating the item to a factory ledger account, it is usually the first letter of the item name and tends to describe the item and, by representing the name, indicate the functional classification. Thus "Cord—Sash" would be descriptively coded "C" and functionally "B" as an item of building maintenance. Care should be used that the letter is descriptive of a general classification. For example, there are many kinds of brushes, all of which should be coded under the descriptive letter "B" rather than "P"—paint brushes, "S"—scrub brushes, "W"—wire brushes. The general category is brushes. The type will be shown by the classification number.

Classification or suffix number—The classification number is affixed to the code letters and starts with 1. Its purpose is to subclassify items of a general category. As was indicated above, "brushes" is a general category. The particular kind of brush is shown by classification number. In the example of drills cited earlier, this number might denote a particular kind (letter or number), or a type and kind (straight shank carbon). Again the classification number can be used to designate a particular make. For example, several makes of electric drills may be used for which a small stock of repair parts is maintained. Thus "EE" would indicate parts as "Equipment Repairs—Electrical" and the classification number would be used to show the make: 1—Van Dorn, 2—Black and Decker, 3—Thor, etc.

By a careful assigning of code letters and classification numbers, any kind of supplies can be described, leaving only the identification of the individual piece.

Item or prefex number—Having coded an item as to general type or make, it remains only to identify it as a specific article. This

is done by prefixing a number to the code already set. In doing this, if the article is to be identified by size, it is desirable to start with the smallest size. Numbers are cheap and, in the interest of stockroom efficiency—present and future—it will be advisable to assign numbers for items not currently stocked but which conceivably might be carried in the future. For example, when numbering drills, a drill catalog might well be obtained and, starting with 10 as an "A" size, identification can be provided for all letter drills. The same can be done with number drills and with other types. The method likewise applies to taps, reamers, files, bolts, screws, in fact, to any item where size is the governing differentiation. With other supplies, this differentiation might be by capacity or power, etc.

Complete Identification—A Few Examples

The foregoing paragraphs have covered the steps required to construct complete identification by a combined number and letter code. A few examples, starting with the basic fundamental letter, may assist visualization of the grouping of the four components of the system and may clarify any doubts as to its application. The following are presented for this purpose:

B—Building and building equipment repairs

10 BA 1 —Asphalt
12 BC 1 —Catches, transom, dull brass
10 BG 2 —Glazing points #0

E—Equipment Repairs

15 EB 1 —Belt, vulco 81C
103 EB 2 —Belt, rubber, 3" 4 ply
25 EB 3 —Belt fasteners, clipper #3
14 EN 5 —Nut, wing—7/16-14
13 ES 14—Shield, expansion, long for ½" screw

M—Machinery repairs

10 MB 1 —Bearing, oilless bronze for Western single spindle drill
11 MB 1 —Bearing, oilless bronze for Avey drill
14 MO 1 —Oil cups, 1 oz. compression

P—Paint supplies, plating supplies

10 PA 1 —Plating anodes
11 PB 1 —Paint brush, flat wall 3"
11 PB 2 —Plater's brush
12 PC 4 —Commercial whiting
15 PC 4 —Dry red lead

T—Tools, perishable

10 TD 1 —Drill, letter "A"
17 TD 1 —Drill, letter "H"
23 TD 2 —Drill, number 14
26 TD 3 —Drill, straight shank carbon 3/8"
25 TD 10—Dies, geometric 5/16"-124

The "Who" and "How" of Putting the System in Operation

One man from the cost or factory accounting department and a few part-time typists comprise sufficient staff to put the system in operation. The man selected for the task should be thoroughly familiar with the chart of factory accounts as well as the uses of material carried in the expense stores.

The first step in setting up the system is to secure a complete list of all items carried in the central storesroom. This list should include sufficient description to identify fully each item as to size, color, chemical analysis, or other basis by which it is ordered and used. After obtaining the listing from central stores, similar lists should be made for each substockroom. Each item on the sublistings should be checked against the master list to see that the same description is used. This checking will doubtless disclose items that are stocked according to the terminology peculiar to the men requisitioning them. Any items which cannot be readily matched with the master list should be checked by the systems supervisor personally and the description by which the parts are shown on the master list should be noted on the sublist. Of course, there may be items that are stocked only in a substockroom, as drill rods which may be in a tool stockroom only. These items should be added to the master list.

Having completed this checking, the next step is the assigning of item numbers. Here is where the supervisor's knowledge of the uses of the stock and of the chart of accounts may make the differ-

ence between a system and just a miscellany of numbers and letters. A really workable system depends on a careful analysis of the identifying codes. Items which are identical but which have been carried by the different names as listed in the supplier's catalogs, will be disclosed as the supervisor assigns the numbers. After all items of the master list (including those added from the sublists) have been assigned numbers, each sublist should be coded to agree with the master list, the list returned to the proper stockroom, and bin cards made showing the number assigned.

It is obviously impossible to expect the foreman or other person authorized to sign requisitions on the stockroom to know or remember the item numbers. It is, therefore, the duty of the stockroom attendant to write on the requisition the item number of the part issued to fill the requisition. All records pertaining to expense stores items should be set up by the complete item number and purchase orders and receiving records should carry this number. The saving of time in matching invoices with receiving slips, checking prices, and posting and pricing requisitions according to numbers instead of name or description, will enable reports to be prepared much more quickly.

To briefly summarize the working of the system, it will permit the same general handling and controls to be applied to expense stores that customarily exist for productive materials.

SCHEDULING PRODUCTION AND RECORDING CONTRACT COSTS IN THE INSTALLATION OF COTTON GIN BUILDINGS

by J. KIERNAN WHITE,
Assistant Secretary-Treasurer and Office Manager,
The Murray Company of Texas, Inc.,
Dallas, Texas.

The many-sided construction industry poses numerous operating and accounting problems. This paper narrates procedures in force in a company engaged in the seasonal occupation of installing structures in which cotton is processed. How close track is kept of the progress and costs of orders in the shop or in course of erection is given in some detail.

THIS case study covers the cost and accounting system used by our company to control costs of fabrication and erection of cotton gin buildings and cotton seed storage houses, as well as the modification of existing buildings of these types. In the paragraphs below, some initial explanations are provided to afford a common understanding of the terminology used and to provide a general review of factors affecting the fabrication and erection of the building units.

The delivery and erection of the new cotton gin buildings and storage houses and the repair of existing structures is a seasonal business which must be accomplished between the months of January and August, depending upon the area, but always prior to the ginning season. With erection a seasonal business, the fabrication of the buildings must be completed on a scheduled basis to allow timely shipment to the erection site. There are, of course, emergency cases of repair during the ginning season to rebuild structures damaged by fire (which has a relatively high incidence in structures of this type) and we are also able to erect during the ginning season some buildings which are not to be put into use until the following season. Because of processing factors and customers' volume requirements, we offer some twenty-nine basic styles of buildings to house gin outfits. These styles range in size requiring from one to three sixty-foot gondola cars to ship each building.

Machinery Housed in the Structures

It may be well to clarify the terms "gin" and "ginning." A cotton "gin" is a collective term that applies to an assemblage of machinery, equipment, and buildings designed to separate the raw cotton fibre, or "lint," from the seed on which it grows, convey the seed to the storage house, and concentrate or compress the lint into bales for shipment. Although the complete machinery in any building is referred to as an "outfit," this is actually composed of the "gin stand" which is the unit which detaches, by means of circular saws, the lint from the seed, and the "press" which compresses the lint into bales. There are also the requisite power plants, conveyor systems, drying units, etc.

The size, number, and positioning of the gin stands govern the capacity of the "gin" and affect the size requirements of the buildings. The stands are termed as "70's" or "80's" depending on the number of saws in the stand, and are coupled together in batteries, either in a single line or in a double line to provide for transmission or flow of lint in two directions (left- or right-hand outfits).

In addition to gin stand requirements, other factors affect the building requirements. Some areas require special machinery to dry the cotton before processing, and local harvesting conditions, weather, and hand or mechanical picking may necessitate more or less equipment to remove leaves and trash from the cotton before ginning.

Estimate, Contract, and Detailed Specifications

The company sales engineer determines (with the customer) the building requirements, type, size, etc. An estimate form (Exhibit 1) is completed, based on the company price lists and freight rate schedules to the required erection site. The building contract form is then completed, signed by the purchaser, and forwarded to the company, with estimate and basic building drawings attached. The contract is checked by the sales department, assigned a contract number, and passed to the treasury department which approves credit and proposed payment terms. Upon approval, the contract becomes a bona fide order and is entered by the treasury department on a daily analysis of shipments report, as accepted unshipped business. The contract is then forwarded to the engineering department. In the meantime, the sales department has established a progress information report covering the order and copies of this report are sent to the engineering, factory, and shipping

departments as control media. The erection supervisor prepares an erection wanted form and tentatively assigns place on the erection schedule. (The sales department is advised weekly of changes in the erection schedule to assist in governing erection dates.)

Because of the variety of machinery and equipment to be housed within a building, certain modifications must be anticipated in almost every contract, and this is provided for in an "additions" and "deductions" section toward the bottom of the estimate form. Some of the machinery is suspended from the columns or trusses.

THE MURRAY COMPANY OF TEXAS, INC., Dallas, Texas. S.R. J. N. Day
STEEL BUILDING Estimate for Coppage-Long Gin Co. Date March 9, 1949
P.O. Anywhere, Mo. R. R. Sta. same

Size of Building; Length 120' Width 30' Height 24'	PRICE	WEIGHT
Base Price of Building per Drawing No. 5-80 RHR-1	$ XX,XXX.XX	82,000
Add for each Two (2) Feet over Standard Length of Building		
Add for each Two (2) Feet over Standard Length of Wagon Shed		
Deduct for each Two (2) Feet of Building $		
Deduct for each Two (2) Feet of Wagon Shed		
TOTAL BASIC PRICE	$ XX,XXX.XX	82,000
Extra Side Dormer		
Extra Partition		
Extra Doors Size each $		
Extra Sash Size each $		
Dust Room One Size 10' x 14' x 24' feet	XXX.XX	3,000
Office Size x x feet		
End Wagon Shed Size x x feet		
Other Additions:		
TOTALS	$ XX,XXX.XX	85,000
Other Deductions: $		
Price F.O.B. Factory	$ XX,XXX.XX	85,000
Less 2% discount for cash	XXX.XX	
Net Cash Price F.O.B. Factory, Without Tax	$ XX,XXX.XX	
Freight Rate .56 Weight 85,000 Pounds	XXX.XX	
Erection: 2 men @ 8 % of Factory Price $ XX,XXX. Plus $100.00	XXX.XX	
Total Net Cash Price, Without Tax	$ XX,XXX.XX	
Sales or/and Use Tax at Rate of ___% on Factory Selling Price, ADD		
Total Including Tax	$	

EXHIBIT 1

Other machines are installed with standards and supports. Installation of overhead machines requires fabrication of certain columns and trusses so that the building will carry the additional weight. The changes will be identified in the shop and to the erectors by the original column or truss designation, followed by the contract number and detailed by specific drawing numbers. It also follows, if overhead machinery is to be installed, that the top and bottom panels on both sides of the buildings must be of larger or smaller dimensions than the plan of the basic building used as a guide in making the sale.

The engineering department completes the specifications to be used in the shop and by the shipping department and also the specifications to be used by the cost department. The sheet shown as Exhibit 2 is a top sheet and recap of detailed specifications which may run for many pages. A shop order form is written and the several parts of the work as identified are distributed to the departments affected, the office copy and record copies being retained in the pricing department file. Since all work and consequent cost is governed by the specifications, the description of the material to be shipped reads "one steel building, plan———."

Scheduling Production and Materials; Original Cost Card

A continuing analysis is made by the sales department of the sales engineer's reports and contracts on hand to determine the type, size, and delivery date of buildings required for the various territories and, based on this analysis, a production schedule for steel buildings is released to the shop at some time before the middle of August. The production department prepares and issues Manufacturing Orders (Exhibit 3) for certain stock items such as trusses, panels, partitions, purlins, and braces. The manufacturing orders are issued in duplicate, the original copy being forwarded to the cost department together with a cost card. A progress card, indicating the work to be done and the scheduled completion date for the portion in question, is issued to each department performing work on the order. These comprise cutting, shearing, punching, welding, riveting, assembling, sheeting, painting, and loading departments.

A production list is prepared covering the various sizes, shapes, forms, sheets, and other material required to fabricate the order. A requisition for order is written to obtain such of this material as is available from the company warehouses and storerooms. Be-

fore being passed, with the progress cards, to the various departments, the requisition for order is entered on a material control card, shortages or below-minimum amounts being noted for required purchase. By analysis of the production list, the production department is able to determine all the sizes and shapes of steel and other materials which are to be used in the year's schedule and, in conjunction with the material control card, can coordinate the quantities to be purchased and the dates of delivery

SPECIFICATIONS
OF
THE MURRAY COMPANY of TEXAS, Inc.
DALLAS, TEXAS

S. E. J. N. Day

Date of Order 3-9-49 To be Shipped 5-18-49 Contract No. 25523

Their Order No. Contract Date Shipped 5-20-49 Shop Order 12752

Ship to The Murray Company of Texas, Inc. (Notify: Coppage-Long Gin Co.)

Destination Any Where, Missouri

Via See J.B.G. Santa Fe - Dallas - St. L. SW

The Order of Kraft - B/L. Account of Coppage-Long Gin Co.

In Care of Postoffice Any Where, Missouri

Prepaid Station Signed Chas. McPoma
Shipping Clerk

Invoice 4006

Date May 21, 1949

Car Ordered 9-10-49

Car No. CRO-1019 B+O 25928

Car Initial "

Received 3 PM - 5-17 3 PM - 5-18

From Brauen

Time 4:30 - 5-20

Gross

Tare

Net

Misc. Book Entry Date 5-30-49

Drawing Nos.

Date Made Out 5-5-49 JG

Fabricated Structural Steel	35,600
Sheeted Steel Panels	32,059
Loose Corrugated Steel Sheets	14,471
Formed Steel Sheets	2,090
Crated Door Hardware	250
Boxed Bolts, Nails, Etc.	438
Steel Sash Putty	250
Total Weight of Shipment	85,158

EXHIBIT 2

Form M2100—50M

OFFICE

The Murray Company of Texas, Inc.

57964
SHOP ORDER No._____

Manufacturing Order for Contract # 25523 **Date** March 11, 1949

For delivery 5-18-49

Quantity		ARTICLES	ORDERS ISSUED TO DEPT. No.'s						COST CARD SUMMARY ACCOUNT	AMOUNT
			1	2	3	4	5	6	Merchandise	
									Manufacturing Stock	
									Supply	
									Castings	
									Lumber	
									Manufacturing Labor	
									O. & M. Distribution	
	1	5/80 R H R - 1								

EXHIBIT 3

requ
pare
U
in th
show
The
forw
cost
as r
the
colu

Time

T
tirel
tions
and
The
pare
num
tion
timek
payr
plete
on th
the j
on th
card
the
ticket
for t
time
for e
the fa

W
are b
for e
accou
ing c
(reve
ber a

required for such materials. Requisitions for purchase are prepared and forwarded to the purchasing department.

Upon receipt of the original copy of the manufacturing order in the cost department, entry is made on each stock card affected, showing the order number, quantity, and date to be manufactured. The manufacturing order is initialed by the stock record clerk and forwarded to the time clerk to be held for action on the order. The cost cards are filed in the cost department in numerical order and as requisitions for order are received, the card is removed from the open file, the cost of the materials is recorded in the appropriate columns, and the card held as an "in process" card.

Timekeeping; Labor Cost Accumulation; Burden Application

The timekeeping and payroll systems are standard and relatively simple. Upon receipt of the progress cards and requisitions for order, the foreman of each department affected schedules and assigns the work to be done so as to meet the completion date. The timekeeper records the job on a timekeeper's memo and prepares a time ticket showing: the production order number, man's number, commencing time, and a brief description of the operation to be performed. The time tickets for the day are kept in the timekeeper's office in slotted trays, numbered to correspond to the payroll numbers of the men in the shop. When the job is completed during the day, the timekeeper indicates the completion time on the time ticket and on the controlling timekeeper's memo. If the job is not completed during the day, the quitting time is noted on the time ticket and also on the timekeeper's memo, and a new card for the job is prepared and placed in the operator's slot for the following day, such ticket cross-referenced to the previous tickets to provide control of the number of time tickets on the job for that department. If a man works on more than one job, his time is recorded on a separate time ticket for each job. Time tickets for each day are forwarded to the cost department the morning of the following work day.

When the time tickets are received in the cost department, they are batched by clock card number and the time elapsed is figured for each ticket to determine that the operator's full time has been accounted for. The time tickets are then resorted by manufacturing order sequence and entered on the labor sheet (Exhibit 4) (reverse side of manufacturing order), indicating operator number and time worked. After this the time tickets are filed in pack-

THE MURRAY COMPANY of TEXAS, Inc.
LABOR SHEET

JOB Cappage Bldg. # 28523 COST NO. 57964

MAN'S NO.	MON.	TUE.	WED.	THU.	FRI.	SAT.	TOTAL HOURS	RATE	TOTAL LABOR		O+M%	TOTAL EXPENSE		
101	8		8	8	8		32	#						
102	8	8	8	8			32	#						
103		8	8	8	8	4	36	#						
104	8	8	8	8	8	4	40	#						
105	8	8	8				24	#						
106		8	8	8	8		32	#						
107		8	8	8	8	4	36	#	#		#	#		
							Entered RJ 5-8							
101			8	8	8		24	#						
102	8	8	8	8			32	#						
106	8	8	8	8			32	#						
107	8	8	8	8	8		40	#						
108	8	8	8	8	8		40	#						
109	8	8	8	8	8		40	#	#		#	#		
							Entered RJ 5-15							
204	8	8	8	8			32	#						
206	8	8	8	8			32	#						
209	8	8	8	8			32	#						
211		8	8	8	8		32	#						
214		8	8	8	8		32	#						
215		8	8	8	8		32	#						
110	8	8	8	8	8		40	#						
117	8	8	8	8	8		40	#	#		#	#		
							Entered RJ 5-22							

EXHIBIT 4

ets by dates in the cost department. The labor sheet is dated for a "Week ending ————" and the entries totaled for the period.

Work is accounted for to a minimum of ten-minute periods, indicated as sixths of an hour. Using a chart of clock numbers with hourly rates noted opposite, the time clerks rate the time as indicated on the sheets. Once each week, extensions are made to

accumulate labor dollars expended on the order and the factor of overhead for the shop is applied to accumulate the burden absorbed. At the end of the accounting period, which is a month, the several weeks' labor and the burden to be accounted for are brought to a total and entered on the cost card, and the labor sheet is stamped "entered" under the totals.

When an order has not been closed by the end of an accounting period, the cost card information is entered on the cost summary record, debiting "in process" and crediting labor, material, and burden accounts. The time applied to the order from time tickets in subsequent periods is recorded as a running record, and the cost department originates continuation labor sheets if required to record this time. In cases where a man on productive labor is used to perform work in creating an asset or to assist in maintenance work, a transfer ticket is used to record this time. The time recorded on the transfer ticket plus the time recorded on productive labor time tickets should total his full day.

Clock numbers are assigned by department. A man permanently transferring to another department is assigned a new clock number for that department. (Temporary transfers retain their own clock numbers.) Permanent transfers usually occur as a result of reclassification or low production periods when operators exercise plant-wide seniority rights. The departments affected by reclassification are advised of the change on a job change notice which provides for verification by the payroll, personnel, and cost departments. The payroll is written on accounting machines, which prepare, simultaneously, the check, earnings record, and journal. The recapitulation sheets of the payroll journal are used for entry into the general ledger.

Completion of Shop Work and Cost Cards

As an order is completed in each department, the foreman sends his progress card to the production department, indicating the date on which the work was completed and released from his department. These cards are filed by the production department and serve as a record of current status of the order. The progress cards are checked off on the duplicate copy of the manufacturing order retained in the production department and, when all progress cards issued against the order have been returned, the order is recorded as closed on the material control card. The progress

cards are delivered to the cost department, indicating that all work has been completed and that the order may be closed.

On the day following receipt of the progress cards by the cost department, the daily time recording (described above) will have been completed and the manufacturing orders affected are removed from the open order file and matched with the progress cards. Extensions are then made and recorded on the cost cards. All requisitions for order are brought together with the progress cards, manufacturing orders, and the cost cards. The cost card is then totaled and ruled. The totals are entered on the face of the manufacturing order in the spaces provided for labor, materials, and burden. The total is divided by the number of items to determine unit cost which is then entered directly under the department routing, and the manufacturing order is given to the stock clerk for entry.

After recording has been made to the stock cards, the requisitions for order and progress cards are stapled to the manufacturing order which is held with the cost cards until the end of the month, at which time all manufacturing orders closed are arranged in numerical order for entry in the cost summary. At this time a journal entry relieves "in process" of previous entries into it and the inventory account is charged. After this recording, the manufacturing orders and other attached media are filed numerically in folders accommodating about fifty manufacturing orders. The cost cards are filed in a separate file as closed orders.

Erection; Accounting for Erectors' Wages and Expenses

The company's contract with the customer provides for furnishing an erecting crew of two men to supervise local labor in the erection of the building and the installation of machinery and equipment. Foundation construction is the responsibility of the customer's contractor, the company's obligation in this respect being the furnishing of prints of foundations and erecting plans. These are forwarded to the customer by the engineering department as soon as they are completed. A week before the scheduled shipping date of the material, the sales department contacts the customer to advise him of the shipping date and to make sure that foundations have been completed. The customer is also requested to provide unloading facilities and necessary common labor.

At the same time the company erection crew is instructed to be at location to supervise unloading. The erection crew is provided

with company trucks having bodies so constructed as to carry the tools and equipment necessary to the erection of a gin building. This equipment is furnished and replaced where necessary through the company storerooms. Certain expendable material (such as acetylene and oxygen) is replenished on the road as needed, and "gin poles" or portable derricks are rented locally to be used in the lifting and setting of the columns and trusses.

Upon arrival of the shipment at the gin site, the steel is laid out on the lot in such a manner as to eliminate the necessity of rehandling, with columns, trusses, panels, etc., placed according to sequence of installations as indicated on the blueprint. This minimizes the time of the erection crew at each location and allows the erection of more structures within the limited erection season.

Time and expense of the erection crew is accounted for on an expense report, the recapitulation section of which provides for: time, hotel and travel expense, and construction expense. These entries are vouchered into the cost of erecting which is recorded in the accounts, "erector's wages" and "erector's expenses." The expense report is rendered weekly, an expense report being filed against each contract so that in cases where a job is completed in midweek and travel to the next one begins the same day, two reports are filed. Overtime is charged to the cost of erection which caused the overtime. The time of the erectors is transferred by the payroll department to a time card in order to conform to the overall payroll procedure.

Closing and Billing the Contract

The specifications, shipping copy of the shop order, and the bill of lading (which have served their purpose to marshal the order and to provide the medium of recording information such as time of shipment, routing, railroad car number, etc.) are forwarded by the shipping department to the pricing department where the contract and shop order are brought together. The record copy of the shop order is separated from the office copy, dated with the date of shipment, and filed alphabetically by customer. The office copy is priced and—with the specifications, shipping copy of the shop order, bill of lading, and contract—is delivered to the billing department. After preparation of the billing, the invoice and contract folder are forwarded to the credit department where the invoice, bill of lading, and draft are mailed to the customer's bank for collection. A copy of the invoice for bill number control, an

accounting copy for posting procedure, and salesman's copy are sent to the accounting department.

The credit department retains the correspondence and the contract folder, sending the specifications and the shop order to the cost department. In the cost department, entries are made to the stock cards and each item shipped is costed on the specifications and accumulated for total cost. This total cost is recorded on the office copy of the shop order and the requisition for material. The shop order is filed numerically while the requisition for material is delivered to the accounting department to be entered in the sales journal as a debit to cost of sales and a credit to inventory. The requisition for material is then filed according to invoice number.

Erecting expense, freight charges, and costs of shipments from orders in process cannot always be determined by the end of the accounting period in which a sale is recorded. An estimate is made of these costs and this is entered on the specifications as a memo entry. A journal sales adjustment is used to establish an equitable means of ascertaining the cost of the contract. Since the accounts "erectors' wages" and "erectors' expenses" are expense accounts, the sales adjustment journal accomplishes the following: debits cost of sales and credits the expense accounts, debits cost of sales and credits inventory. The true cost when known is recorded and the sales adjustment entry is reversed.

Keeping Track of Processing and Costs

The procedure outlined above is relatively simple to administer and is undoubtedly similar, in general, to the procedures of enterprises of a like character to ours. It serves its purpose in our company in that it enables us to schedule and to control the production and processing in our plant and field locations and, at the same time, it provides a means of collecting cost information by which we can measure, as we go along, the accumulated cost of each job. Only by such dual control can we gain the profits, the earning of which, after all, is the reason we are engaged in business.

A SYSTEM FOR HANDLING CUSTOMERS' ORDERS AND EXCHANGE REQUESTS IN A MAIL ORDER BUSINESS

by FORD A. GRANT,
Vice President and General Manager,
Thomas Industrial Corp., Harmony, Maine

Many small orders, numerous customers, and contacts exclusively by correspondence, are characteristics of mail order merchandising which render orderly handling of shipments and maintenance of satisfactory customer relationships especially difficult. How one company simplified matters through the use of a three-copy record form, entered by transcription from the customers' orders, is narrated in this article.

THE selling process in a retail mail order business is very much different from retail store selling. Our sales people do not meet the customer face to face. All communication is carried on in writing rather than conversation. Letters and packages returned to us for refund or adjustment have a way of getting separated. This requires some method of matching up related items. Many customers' orders are difficult to decipher and, if it has to be done by several different people, it is expensive. When there are price changes, there must be some means of telling what a customer paid when she asks for a refund or adjustment. Mails take time. People forget. There must be a way of connecting past events with present.

All of these differences, each of which raises its own special problems, are a challenge to the accountant to devise an improved system. In our company, which sells yarn primarily on a cash with order basis, the handling of customers' orders and correspondence had been carried on for many years without any broad systematizing. Many ingenious codes, short cuts, and procedures had been devised which worked very well. Also we are fortunate in having clerks with excellent memories, a necessary adjunct to the old process. However, new products, selling policies, and the difficulty of replacing the high type of employee necessary to keep the old system going, prompted us to work out a system which should eliminate some of the brow-breaking memory feats that we had gone through. We have by no means thrown out the old system but have

given it some new helps and endeavored to make it more of a routine rather than a puzzle. After considerable study, we decided that a conventional multicopy form with one-time carbon would be the answer. At first we had four copies but have cut it down to three.

The first copy, as illustrated in Exhibit 1, provides for a record of the amount of money received and the form in which it was received. The abbreviations at the upper left are: CK. (check), MO. (money order) and PN. (postal note). Credit is from previous order. All this information is important when it is necessary to find details about a specific cash item at a later date. We also have a space to check if the order is c.o.d. As will be noted later, remittance information is blocked out on the second copy of the form but carries through to the third. This money received section is filled in with ball pen or pencil as each order is opened and money removed by the chief clerk. The number of the form is then written on the customer's order envelope. (We must keep the customer's envelope as well as the order because many people write their name and address in only one place, and it takes too much time to copy it —also many do not *fasten* their yarn samples to the order.)

By having only one person, plus an assistant during busy times, to open mail and issue forms, it makes it possible to keep the flow of work under control. After completion of the money received section, the customers' orders and forms are then given to a typist who fills in the address to which the merchandise is to be sent and date of order. This data appears on all three copies. If a person sends in an order to be sent to another party, we initiate two forms. One shows the money received and the name of the person sending the order. The other shows the address of the person to whom the goods are to be sent. There are notations made on each form to cross reference them and explain the situation.

Filling, Pricing, and Shipping Orders

After the addresses are typed, the orders and forms are given to our order clerk who either fills the order, himself, or delegates it to an assistant. Each item, unit price, and extension are listed on the middle part of the form and the total amount of the order, as filled, is written below and also carried up to the proper space in the upper left section. If the amount of money received is the same as the amount of the order, no further writing is necessary. If the money received is more or less, the clerk makes a record in the refund portion of the cash received section. Small amounts are re-

RECEIVED

CK $_____

MO $_____

PH. $_____

CASH $_____

STAMPS $_____

CREDIT $_____

C. O. D. ☐

TOTAL $_____

TOTAL INVOICE $_____

REFUND

BY STAMPS $_____

BY CHECK $_____

DUE $_____

TO:

Nº 10900

DATE OF ORDER _____

FILE COPY

NO.	DESCRIPTION	UNIT PRICE	TOTAL
SK.	HARMONY — ZEPHYR RUG — WORSTED — WOOLEN		
SK	HARMONY — ZEPHYR RUG — WORSTED — WOOLEN		
SK.	HARMONY — ZEPHYR RUG — WORSTED — WOOLEN		
	TOTAL OF MERCHANDISE SENT		

DATE ORDER SENT _____

Nº 10900

EXHIBIT 1

funded in stamps and are sent with the merchandise. As noted below, larger amounts are refunded by check.

The order clerk then tears the second copy of the form, Exhibit 2, out of the set and separates the top section from the bottom on the perforated line. The top section, which is a shipping label, is always passed on with the merchandise to the person who wraps the packages, for pasting on the outside. (A die cut carbon prevents the information about money from appearing on the second copy.) The bottom section of the second copy is the customer's invoice. If no notations are necessary relating to substitutions or items not sent, it is packed with the merchandise. If notations are necessary, it is sent back with the customer's order to the chief clerk, to whom the set of forms (consisting of the first and third copies) is now routed.

Routine Communication with Customers

The chief clerk may then go through the forms for the filled orders. She disposes of the second copies not packed with the merchandise by sending them to the customers by first-class mail, as the writing on them makes this necessary. Sometimes it is also necessary to write an explanatory letter.

If a refund by check is called for by information in the cash section of the first copy, the check is drawn and sent with a letter explaining the overpayment and referring to the customer's invoice. If there is an amount due, it is explained on a postal card. In the forms as first designed, we had the section on money received, total order, etc., reproduced on the second or customer's copy, but it was necessary under postal regulations to send the customer's copy by first-class mail whenever the amount received differed from the value of goods sent. This, in addition to all of the other cases where we had to send the customer's copy first-class (i.e. because of notations in respect of the order itself), made too much first-class mail for a business where orders are small. We therefore have arranged to do more of our correspondence by postal card—including that with respect to short payments—which eliminates the need for cash information on the second copy.

Creation and Uses of Chronological and Alphabetical Files

At this point we have the order shipped. The customer has been notified of any changes, amounts due, overpayments, etc. We now have to prepare for complaints, refunds, adjustments, lost and de-

PACKING LABEL AND CUSTOMER'S INVOICE
(Second copy of order record form)

POSTMASTER:
CONTENTS MERCHANDISE.
THIS PARCEL MAY BE OPENED FOR POSTAL INSPECTION IF NECESSARY.

TO: Nº 10900

FROM
THE BARTLETT YARN MILLS
HARMONY, MAINE

RETURN POSTAGE GUARANTEED

DATE OF ORDER _____

INVOICE: IF YOU WRITE US ABOUT THIS ORDER OR RETURN ANY PART OF IT, PLEASE RETURN THIS INVOICE WITH YOUR LETTER.

THE BARTLETT YARN MILLS
HARMONY, MAINE

NO.	DESCRIPTION	UNIT PRICE	TOTAL
SK.	HARMONY — ZEPHYR RUG — WORSTED — WOOLEN		
SK.	HARMONY — ZEPHYR RUG — WORSTED — WOOLEN		
SK.	HARMONY — ZEPHYR RUG — WORSTED — WOOLEN		
	TOTAL OF MERCHANDISE SENT		

DATE ORDER SENT _____

Nº 10900

EXHIBIT 2

GEOGRAPHICAL ORDER FILE CARD
(Third copy of order record form)

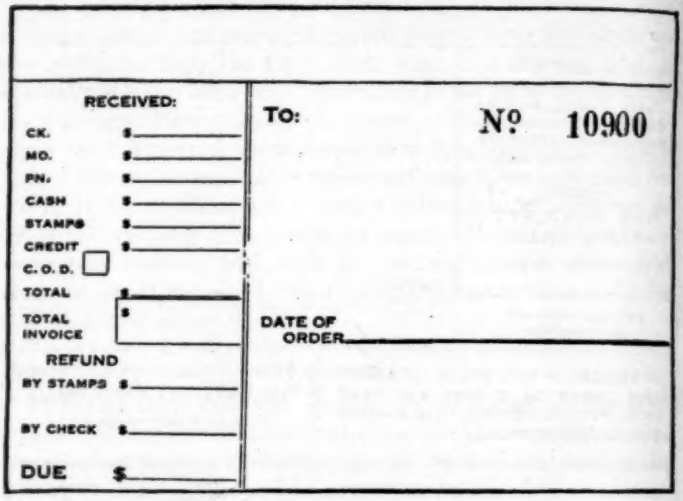

EXHIBIT 3

layed packages, and missent packages. To do this we need to be able to gather all information about a transaction in a short time.

The chief clerk gives the first and third copies of the form to the file clerk. All second copies have been directed to the customer. The file clerk separates the first and third copies. The first copy is filed numerically which places it also in order by date. The third copy (Exhibit 3) is of smaller size, only three inches by five inches, with short carbon, and is printed on card stock. It calls for only the information in the top part of the first copy, i.e., money received, total order, refunds, amount due, name and address, and date of order. These cards are stamped with the date the merchandise was sent out and are filed geographically, first by states, then by cities and towns, and further by names in the cities and towns. There is one card for each customer for each order. This file was maintained under previous procedure but the information was posted from the customer's order. The additional filing space required by the new method is more than offset by the time saved.

With the present procedure, we have a much better record of what has happened than we ever did before. It is possible to make an analysis of sales from the numerical file of the first copies of

the form. In this way, we can tell what items are moving. We also have a detailed record of cash receipts. If any question ever arises as to how much money was sent by a customer and in what form, we can easily find the information. The file cards, or third form, comprise a mailing list to which we send advertising matter. It also provides a record of transactions with each customer.

Merchandise Exchange Procedure

In most cases of exchanges we also initiate our manifold form. Exchanges have always been a source of confusion and it is likewise always difficult to reconstruct the full picture after time has passed. When a customer returns merchandise and asks for full refund, the returned merchandise is listed on the form as being returned. The form and the customer's letter requesting the refund are then given to the chief clerk who figures the amount of the refund and sends a check to the customer with the customer's copy of the form. The label is destroyed. Other copies of the form are filed. When merchandise is returned in exchange for different merchandise of equal value, no form is used. Letters requesting exchanges are always marked with an X when first read, to denote exchanges, and are kept separate from regular orders.

When a customer wants to exchange merchandise for merchandise of a larger or smaller value than that returned, the form is employed. The address to which the goods are to be sent is written in. An X is marked on the form to denote exchange. The merchandise returned and the new merchandise to be sent are listed so that the record is of a net transaction.

Order is Heaven's First Law

In conclusion, it might be stated that the system as we use it has been tailored to a specific physical layout, size of business, and number of employees. It will not work in all cases but might be used as a guide for anyone starting a mail order business or having the usual difficulties in operating one It could mean the difference between success and failure, as a mail order business can be profitable only if it is run properly. However, relatively few do succeed and the important reasons for failing to do so include excess paper work, ease of letting the work slide, and the great amount of thought required to keep it running smoothly. In our organization, an average of five employees handle over $150,000 in small orders each year.

THIS MONTH'S AUTHORS

CHRISTIAN E. JARCHOW (How Do We Stand With Inflation?—A Defense of Conventional Accounting) is Vice President and Comptroller, International Harvester Co., Chicago, Ill. A Certified Public Accountant of Illinois, Mr. Jarchow is a well-known writer and speaker on accounting subjects. He is a former contributor to the *Bulletin*. Mr. Jarchow has recently completed successive terms as President and Chairman of the Board of Directors of the Controller's Institute of America.

DAVID R. CLEMENTS (Daily Reports to Help the First-Line Supervisor Control Costs in a Steel Rolling Mill) is Chief Accountant, Connors Steel Co., Birmingham, Ala., a post he has held since 1944. Mr. Clements has been with his company since 1928 and, before entering the accounting division, was a supervisor and, subsequently, a departmental superintendent in the company's plant.

PAUL G. ROHLFING (The Push for Pensions—Important Considerations in Devising and Qualifying a Pension Plan) is Partner in the Certified Public Accounting firm of Wall, Cassel & Groneweg, Dayton, Ohio. He is a Past Vice President of the Ohio Society of Certified Public Accountants and is Past President of The Accountancy Board of the State of Ohio. Long active in N.A.C.A., Mr. Rohlfing was President of Dayton Chapter, 1944-45, and a National Director, 1946-47.

NORMAN F. YOUNT (Assembling and Reporting Employee Service Data for Actuarial Use in Devising a Pension Plan) is Chief Accountant, Steel Division, Copperweld Steel Co., Warren, Ohio, and has been with his company since 1940 except for a three-year period of military service. Mr. Yount has had experience in the public accounting field.

MERLIN H. BIRK (A Company-Trusteed Profit-Sharing Retirement Plan with Annual Distribution of Fund Income) is Treasurer and Controller of Waukesha Foundry Co., Waukesha, Wis., with which he has been connected for a ten-year period. Since 1944, Mr. Birk has been Trustee of the pension trust plan described in his paper and is responsible for its administration.

ORRIN F. BRUNNER (A Cash Forecasting Procedure for Smaller Companies) is Controller of Ladish Co., Cudahy, Wis. Formerly a Senior Accountant with Arthur Andersen & Co. and Haskins & Sells, Mr. Brunner is a Certified Public Accountant of New York and Wisconsin.

NOEL L. SMITH (Better Identification of Expense Materials Through Mnemonic-Numeric Coding) is Chief Accountant with Hill Diesel Engine Corp., Lansing, Mich., which he joined in 1943. He was formerly with Reo Motors, Inc. for an extended period. Mr. Smith is a previous contributor to the *Bulletin*.

FORD A. GRANT (A System for Handling Customers' Orders and Exchange Requests in a Mail Order Business) is Vice President and General Manager, Thomas Industrial Corp., Harmony, Maine. Mr. Grant was formerly Managing Director of Thomas Business College, Waterville, Maine, and has had experience in the public accounting field.

J. KIERNAN WHITE (Scheduling Production and Recording Contract Costs in the Installation of Cotton Gin Buildings) is Assistant Secretary-Treasurer and Office Manager of The Murray Co. of Texas, Inc., Dallas, Texas. Mr. White has been connected with his company for nearly twenty-five years and has been employed in each of its departments.

THE COST FORUM

But Marginal Profit Analyses Are More Effective

Editor, N. A. C. A. Bulletin:

I read with considerable interest Mr. W. A. Hensel's article in the September 1949 issue of the *Bulletin* in which he advocates net profit analysis for products, branches, and customers. To calculate the net profit figures referred to by the author requires the allocation of indirect costs to specific phases, elements, and divisions of the business. Mr. Hensel admits this is a challenging problem because we lack good measurement factors for allocating many of the items of indirect cost. Yet, he contends, we should awaken management's interest in net profit analysis by products and sales branches and get them to use these figures as a basis for decisions.

When net profit figures on products and sales branches are submitted to management, the one submitting them has a duty to explain the bases used for allocating costs. The perpetual problem of cost accounting is allocation. The bases for cost allocations are usually assumptions influenced by the purposes for which the figures are going to be used. If you expect the sales manager to use these figures, he should have something to say about the bases used for cost allocations. Otherwise the figures may not suit his purpose. If this is so, he will not use the figures. Cost accounting has not yet developed a technique for accurately allocating all costs to different activities of a business. Unwise decisions can be made on the basis of figures containing erroneous allocations of cost, i.e., erroneous from the standpoint of the purpose to be served. Fortunately for all of us, most men in management are a little skeptical of financial accounting figures and their policies and decisions are influenced by qualitative as well as quantitative factors.

The allocation of fixed costs to units of product is necessary for financial accounting purposes so that inventory valuations can be determined. Orthodox practices are usually followed because there are parties at interest in addition to internal management-ownership, i. e., the credit man, the banker, and the government. It is doubtful if the allocation of fixed costs to products, branches, etc., is necessary in preparing cost figures for any other purpose. Most cost accountants realize that the allocation of fixed charges to products, divisions, and branches is based on dozens of assumptions which result in dozens of arbitrary decisions. The scope of individual judgment has to be wide because of the different purposes for which cost figures are used. The cost accountant who makes a study of this problem will recognize that net profit figures for different activities of the business, based on such a vulnerable structure, are not very meaningful to the operating management of the company. He will finally conclude that the most useful figures he can prepare for management requirements should not contain elements of fixed cost which cannot be directly allocated.

Profit analysis which shows management the variable (out-of-pocket) costs of producing and marketing different products and the marginal profit (sales price, less variable cost) is useful and a real aid to the management

in establishing sales policies, pricing policies, and production policies. Variable costs are fairly constant. Consequently, the sales effort on products showing the best marginal profits should be intensified. When management personnel have marginal profit figures for different products before them, they quickly see that the larger the portion of the productive capacity available that can be allocated to the production of products with the best marginal profit, the higher the over-all profit will be.

Knowing what the fixed costs amount to in total and knowing the marginal profit by products, one is in a position to ascertain the break-even point for any individual product or mix of products. The amount of accurate and useful information provided in profit analysis which excludes fixed costs and the simplicity with which the figures can be presented, makes such analysis an important instrument in profit control. Net profit analysis is not as effective because it is based on arbitrary allocations of fixed costs which were incurred due to the passing of time and these costs do not fluctuate with the fluctuations in production and sales volume.

T. R. ELSMAN, *Newark Chapter*

Training of Accounting Staff

Editor, N. A. C. A. Bulletin:

The article "A Report on an Industrial Accounting Internship Project" by David W. Thompson, in the December, 1949, issue of the *Bulletin*, makes an excellent approach to a very important and too often neglected portion of the field of accounting education. There is a related training program which should be carried on by industry, itself, when it has employed college graduates or others whom it believes to be of the type suitable for future supervisors and executives. Such further training should be in two phases: a preliminary training program and a follow-up training program.

The preliminary program should be started as soon as the individual begins his employment and should be offered to employees in as small groups as practicable. It should consist of the following, at a minimum:

1. A lecture or lectures on the company's organization, its history, certain of its basic policies, etc.—in fact, anything that acquaints the employee with worth-while facts about the organization with which he has just become associated.
2. A series of lectures on the basic accounting system of the company, covering both cost and general accounting and, to the extent practicable, using charts showing the card of accounts, the flow of work, the relationship of accounting between units, etc.
3. A tour of some or all of the plants of the company, with competent guides to explain, briefly and simply, the basic manufacturing processes.

Thereafter, the employee should be put to work at his assigned task but several years later, a second program should be offered to him and other employees in a like situation. This might consist of the following steps:

1. A return visit to all or several plants to review manufacturing processes, with which he has now acquired some familiarity.

2. A lecture on works accounting procedures.
3. A lecture at the home office on the tie-in between plant accounting and general accounting.
4. A general discussion of the application of accounting in the company, with special emphasis on the work the individual is performing and its place in the accounting system, its value to the company, the importance of continued study to disclose avenues to greater efficiency in this work.
5. Education in the use of the company's accounting manual.

If the above two-phase program supplements training such as Professor Thompson outlined, so much the better, but, if the employee has never received such college and prebusiness training, his need for the training just outlined is even greater.

WAYNE R. ARCHERD, *Lehigh Valley Chapter*

Focusing Attention On Scrap Performance

Editor, N. A. C. A. Bulletin:

Material scrapped in process always poses a substantial problem to manufacturers. Control over this phase of waste is most desirable and, in fact, is essential to economical operating procedure. With the renewal of competition, questionable items of expense naturally came under close scrutiny.

Action on the matter was imperative. The method which was introduced to meet this situation resulted in a 44 per cent drop in scrap in 1948 as compared with 1947, and a 30 per cent decrease in 1949 (to the date of this writing) as compared with 1948. The three main factors in the success of the scrap reduction program have been:

1. Establishing of a staff of two reclamation engineers who, with the foreman, make the final decision on all parts as to whether scrapping is more sensible than repairing.
2. Reporting of scrap daily to the accounting department.
3. Publicity within the company on scrap performance.

The reclamation engineers, who report to the production engineering manager, work closely with process engineers, foremen, and the salvage department in their efforts to have all defective material repaired rather than scrapped where it is economical to do so. The scrap voucher (which they make out) is a four-part form, and only one item is dealt with on a voucher. One copy of the form is sent to the accounting department as a daily report the same day that it is made out. Another copy accompanies the material. A third stays with the foreman's copy of the factory order. The fourth and last, after filling other functions in the factory, is sent to the accounting department where it is used as a check copy.

We feel that internal publicity has played an important part in achieving our goal of reduced scrap charges. Our report includes:

1. Detail—
   a. Department reporting the scrap.

b. Responsibility for the scrap, including supplier, if poor material; production engineering, if poor process; engineering, if incorrect drawings.
c. Part name, number, quantity, price per hundred, extension and total dollar value of scrap by reporting departments.
d. Reason part or material is being scrapped.

2. Recapitulations—
   a. By responsible department, showing cumulative total for the year to date.
   b. Totals by months are for the current year to date, with last month and the current month subdivided by weeks.

This program did not reach its present degree of effectiveness overnight but, with the contribution of ideas from numerous sources and a high degree of support, it is now performing well.

WILLIAM L. VICK, *Rochester Chapter*

Standard Performance for the Order Picking Operation

Editor, N. A. C. A. Bulletin:

While less progress has been made in establishing standard costs in the field of distribution than in the field of manufacturing, this is largely due to the fact that most of the activities performed in distribution have not been standardized to the same degree as most of the tasks of production. Without standardization of performance, development of standard cost is impossible. Nevertheless, there are a number of operations in distribution that can be standardized as completely as any in production. Among these are the order-picking operations of wholesalers. The job of picking items off the shelves in filling orders is a routine operation in most wholesaling concerns, so that the principles of standardization can be applied as successfully as to any factory job. It is, therefore, possible to develop performance and cost standards for this activity.

Wholesalers who have separate pickers for each major category of merchandise should develop standards for the pickers of each class of goods. Thus a drug wholesaler might have separate standards for pickers of proprietaries and toiletries, pickers of pharmaceuticals and chemicals, and pickers of sundries. A study of the hourly performance of the pickers in each category for 100 or 200 hours (not necessarily consecutive) should be made and the results for each hour ranked from best to poorest. The performance which represents the group median is selected as the base rate. From the base rate is deducted approximately nine per cent for personal time and fatigue. This is the standard for performance. It is important to notice that it is the median, not the average which is used as the base rate.

If pickers are not specialized to one class of goods, it is necessary to follow a more extended procedure. For drug wholesaling this involves the following steps:

1. Compute the base rate as previously described.
2. For some past period considered typical, calculate the average num-

ber of items of proprietaries and toiletries, of pharmaceuticals and chemicals, and of sundries picked per order.

3. Total the three averages secured in the second step and determine what percentage each average is of the total.
4. Compute a weighted component for each class of merchandise. To do this, multiply the percentage for each class (as found in the third step) by base rate for that same category.
5. Add the weighted components to get a group rate.
6. From the group rate deduct about nine per cent for personal time and fatigue. The result is the group standard.

While the illustration given is for a drug wholesaler, it can be applied equally well in other types of wholesaling where only a few major types of goods are carried. With some modification it might possibly be utilized in setting standards of performance and cost for the order-filling activities of manufacturers.

LEON M. NAD, *Philadelphia Chapter*

COMING ARTICLES

In the *N. A. C. A. Bulletin* for March 1950

Profit Control by Territories and Products—An Application in the Food Processing Industry
by Granville F. Atkinson

Achieving Effective Office Equipment Administration
by William E. Sexton

Development and Contents of a Financial Forecast
by Cuthbert H. Hayhurst

A "Single Premium" Deferred Annuity Pension Plan With Supplementary Profit-Sharing Retirement Benefits
by James M. Shirk

Participation and Premium Cost Records for a Pension Trust Purchasing Retirement Income Insurance
by John W. Flory

Accumulating Information and Installing Records for a Contributory Pension Plan
by Linda Stanford

Better Reports for Closer Control—A Case Study of the Production Reporting Procedures of a Magazine Publisher
by S. Payson Hall